METROPOL

4. Baskı / 4rd Edition

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YÖS

MATEMATİK
MATHEMATICS

KONU ÖZETLİ SORU BANKASI 1
SUBJECT EXPLANATIONS QUESTION BANK

115
uygulama testi
practice tests

41
alıştırma testi
exercise tests

2834
cevaplı test sorusu
practice questions
with answers

abs

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ÜNİTE 1

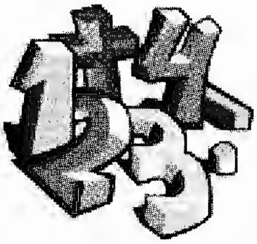
UNIT

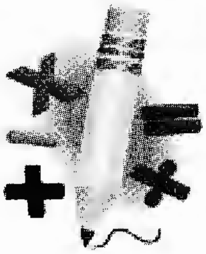
Omar Khayyam

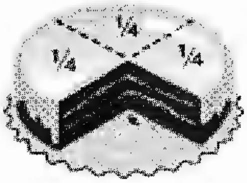
[1048 – 1122]

Ömer Hayyam, anlaşılması güç matematiksel konuları, şiirsel bir dille açıklayan, derin felsefi bilgisi olan bir düşünür ve şairdir. O astronomik tablolar oluşturarak, yeni bir takvimin ortaya çıkmasında katkıda bulunmuştur. Ayrıca bir çemberin, bir parabol ile kesişiminden oluşan ve üçüncü dereceden denklemleri içeren problemleri çözerek yeni geometrik yöntemler de geliştirmiştir.

Omar Khayyam was a scholar who was a poet as well as a mathematician. He compiled astronomical tables and contributed to calendar reform and discovered a geometrical method of solving cubic equations by intersecting a parabola with a circle.







✓ **KONU ÖZETLERİ** .... **1 – 6**
✓ **SAYILAR** .... **7 – 54**
✓ **RASYONEL SAYILAR, ONDALIK SAYILAR** .... **55 – 94**

✓ SUMMARYS .... 1 – 6
✓ NUMBERS .... 7 – 54
✓ RATIONAL NUMBERS, DECIMAL NUMBERS .... 55 – 94

FAKTÖRİYEL / FACTORIAL

Tanım: 1' den n' ye kadar ardışık doğal sayıların çarpımına n **faktöriyel** denir.

Definition: Multiplication of the natural numbers from 1 to n in sequence is called n factorial.

$$n! = 1 \cdot 2 \cdot 3 \cdot 4 \ldots (n-2) \cdot (n-1) \cdot n$$

$$n! = (n-1)! \cdot n$$

$$n! = (n-2)! \cdot (n-1) \cdot n$$

$$n! = (n-3)!\,(n-2) \cdot (n-1) \cdot n$$

$$0! = 1! = 1$$

$$2! = 1 \cdot 2 = 2$$

$$3! = 1 \cdot 2 \cdot 3 = 6$$

$$4! = 1 \cdot 2 \cdot 3 \cdot 4 = 24$$

$$5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$$

Temel Özellikler / Basic Properties

$\forall n \in N^{+} \Rightarrow$

1. $n! + (n+1)! = n!(n+2)$
2. $(n+1)! - n! = n! \cdot n$
3. $n! + (n+1)! + (n+2)! = n! \cdot (n+2)^2$

ARDIŞIK SAYILAR / CONSECUTIVE NUMBERS

Tanım: Belirli bir kurala göre ilerleyen terimler topluluğudur.

Definition: It is a group of terms going forward with a certain rule.

$A = \{1, 2, 3, \ldots n \ldots\}$, $B = \{2, 4, 6, \ldots 2n \ldots\}$

Dizi örnekleri / Examples of sequences:

i. $1 + 2 + 3 \ldots + (n-1) + n = \dfrac{n \cdot (n+1)}{2}$

ii. $2 + 4 + 6 + \ldots + 2n = n \cdot (n+1)$

iii. $1 + 3 + 5 + 7 + \ldots + (2n-1) = n^2$

Genel Toplam Formülü / General Sum Formula

a. Terim sayısı
Number of terms

$$T = \frac{\begin{array}{c}\text{Son terim} - \text{İlk terim}\\ [\text{ Last term} - \text{First term }]\end{array}}{\begin{array}{c}\text{Ortak fark}\\ [\text{ Common difference }]\end{array}} + 1$$

b. Terimlerin toplamı
Sum of terms

$$S = \frac{\begin{array}{c}\text{Son terim} + \text{İlk terim}\\ [\text{ Last term} + \text{First term }]\end{array}}{2} \cdot T$$

TABAN ARİTMETİĞİ / THE BASE ARITHMETICS

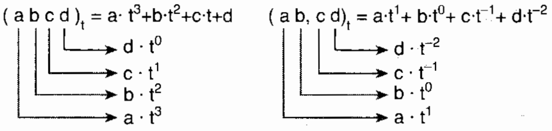
Tanım: Sayının tanımlandığı sayma sistemi tabanı oluşturur. Bu tabanda yapılan işlemlere de **taban aritmetiği** adı verilir.

Definition: The countion system on which the number is defined forms the base. Operations that are being done in the base are called **base arithmetics**.

i. Farklı Tabanda Verilen Bir Sayının Onluk Tabana Dönüştürülmesi / Converting a number, which is given in a different base to the base 10.

a, b, c, d birer rakam, $t \in N^+$ ve a, b, c, $d < t$ olmak üzere

Provided that a, b,c,d are digits , $t \in N^+$ and $a,b,c,d < t$

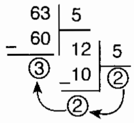

$$(abcd)_t = a\cdot t^3+b\cdot t^2+c\cdot t+d \qquad (ab,cd)_t = a\cdot t^1+ b\cdot t^0+ c\cdot t^{-1}+ d\cdot t^{-2}$$

ii. Onluk Tabandan Başka Bir Tabana Çevirme

Conversion from the base 10 to any other base

Örnek / Example

$63 = (\ ?\ )_5$



$63 = (223)_5$

RASYONEL ve ONDALIK SAYILAR / RATIONAL and DECIMAL NUMBERS

Kesir: a ve b tamsayı ve $b \neq 0$ olmak üzere $\frac{a}{b}$ ifadesi bir kesirdir.

Fraction: Provided that a and b are integers and $b \neq 0$, the expression $\frac{a}{b}$ is called a **fraction.**

RASYONEL SAYILAR / RATIONAL NUMBERS

Tanım: Bir kesre denk olan kesirlerin oluşturduğu küme bir tane sayı belirtir. Bu sayıya **rasyonel sayı** denir. Rasyonel sayılar kümesi Q ile gösterilir.

Definition: The set formed by the fractions to a fraction indicates a number. This number is called a **rational number.** The set of is denoted by Q.

$$A=\{\frac{10}{20},\frac{4}{8},\frac{3}{6}\} \Rightarrow A=\frac{1}{2}$$

$$Q=\left\{\frac{a}{b} \mid a,b \in Z,\ b \neq 0\right\}$$

İŞLEM ÖNCELİĞİ / THE ORDER of OPERATIONS

Matematiksel işlemler aşağıdaki sıra izlenerek yapılır.

Mathematical operations are done by following the ordered operations given below.

1. *Parantez içindeki işlemler*
   Operations in paranthesis
2. *Çarpma ve Bölme*
   Multiplication and Division
3. *Toplama ve Çıkarma*
   Addition and Subtraction

RASYONEL SAYILARIN ÖZELLİKLERİ / PROPERTIES of RATIONAL NUMBERS

1. $-\frac{a}{b} = \frac{a}{-b} = \frac{-a}{b}$

2. $a \neq 0,\ \frac{0}{a} = 0$

3. $\frac{a}{b} \pm \frac{c}{b} = \frac{a \pm c}{b}$

4. $\frac{a}{b} \pm \frac{c}{d} = \frac{ad \pm bc}{bd}$

5. $a\frac{b}{c} = \frac{a \cdot c + b}{c},\ -a\frac{b}{c} = \frac{(-a \cdot c) - b}{c}$

6. $\frac{a}{b} \cdot \frac{c}{d} = \frac{a \cdot c}{b \cdot d}$

7. $\frac{a}{\frac{b}{c}} = \frac{a \cdot c}{b}$

8. $\frac{\frac{a}{b}}{c} = \frac{a}{b \cdot c}$

9. $\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a \cdot d}{b \cdot c}$

10. $a^{-1} = \frac{1}{a}$

11. $\left(\frac{a}{b}\right)^{-1} = \frac{b}{a},\ \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^{n}$

NOT

$\frac{1}{10^n} = 0,\ \underbrace{000......01}_{\text{n tane / n times}}$

ONDALIK SAYILAR / DECIMALS

Tanım: Paydası 10'un pozitif tamsayı kuvvetleri şeklinde olan veya bu şekle getirilebilen rasyonel sayılara **ondalık sayılar** denir.

Definition: The rational numbers, the denominator of which is of the from as positive integer powers of 10 or of the form that gives a result like this when converted, are called **decimals.**

Örnek / Example:

$\frac{4}{10} = 0.4,\ \frac{6}{10^2} = 0.06,\ -\frac{4}{5} = -\frac{8}{10} = -0.8$

Yukarıdaki sayılar birer ondalık sayıdır. / The numbers given above are decimals.

DEVİRLİ ONDALIK SAYILAR / PERIODIC DECIMALS

Tanım: Bir rasyonel sayı ondalıklı sayı biçiminde yazıldığında virgülden sonra gelen kısımdaki sayılar belli bir rakamdan sonra tekrar ediyorsa bu sayılara **devirli ondalık sayı** denir.

Definition: When a rational number is written in the decimal form, if the numbers coming after the common repeats infinitely afterwards a certain number, then these numbers are called **periodic decimals.**

$$ab,cde\overline{fg} = \frac{abcdefg - abcd}{99900}$$

SAYILAR
NUMBERS

BÖLÜM
CHAPTER 1

Alıştırmalar/Exercises

Alıştırma / Exercise 1

1. $\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad} & 5 \\ 2 & \end{array} \qquad \begin{array}{r|l} B & \underline{4} \\ \underline{-\quad} & 3 \\ 1 & \end{array} \quad \Rightarrow$ **A = ?**

Yanıt / The Answer is **67**

2. $\begin{array}{r|l} A & \underline{B+1} \\ \underline{-\quad} & 5 \\ 3 & \end{array} \qquad \begin{array}{r|l} A+1 & \underline{10} \\ \underline{-\quad} & 4 \\ B-3 & \end{array} \quad \Rightarrow$ **A = ?**

Yanıt / The Answer is **43**

3. $\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad} & 5 \\ 1 & \end{array} \qquad \begin{array}{r|l} B & \underline{3} \\ \underline{-\quad} & \\ 2 & \end{array} \qquad \begin{array}{r|l} A & \underline{15} \\ \underline{-\quad} & \\ k & \end{array}$

$\Rightarrow$ **k = ?**

Yanıt / The Answer is **11**

4. $B \in Z$

$\begin{array}{r|l} A & \underline{B^2} \\ \underline{-\quad} & 3 \\ 16 & \end{array} \quad \Rightarrow$ **min(A) = ?**

Yanıt / The Answer is **91**

5. $\begin{array}{r|l} a & \underline{b} \\ \underline{-\quad} & 2 \\ 3 & \end{array} , \qquad \begin{array}{r|l} b & \underline{c} \\ \underline{-\quad} & 3 \\ 4 & \end{array} , \qquad \begin{array}{r|l} a & \underline{c} \\ \underline{-\quad} & \\ k & \end{array}$

$\Rightarrow$ **max(k) = ?**

Yanıt / The Answer is **11**

6. $\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad} & 4 \\ 14 & \end{array} , \qquad \begin{array}{r|l} A & \underline{B+3} \\ \underline{-\quad} & C \\ 2 & \end{array} \quad \Rightarrow$ **C = ?**

Yanıt / The Answer is **4**

7. $$\begin{array}{r|l} 4m5n & 4m \\ \cline{2-2} \underline{-\qquad} & \\ 7 & \end{array} \Rightarrow \mathbf{\max(n) = ?}$$

Yanıt / The Answer is **6**

8. A, B ∈ N,

$$\begin{array}{r|l} A & 15 \\ \cline{2-2} \underline{-\qquad} & B \\ 2B+1 & \end{array} \Rightarrow \mathbf{\max(A) = ?}$$

Yanıt / The Answer is **103**

9. $$\begin{array}{r|l} 1977 \cdot 1978 - 1 & 5 \\ \cline{2-2} \underline{-\qquad\qquad} & \\ ? & \end{array}$$

Yanıt / The Answer is **0**

10. $$\begin{array}{r|l} 3x4x & 3 \\ \cline{2-2} \underline{-\qquad} & B \\ 0 & \end{array} \Rightarrow \mathbf{\sum x = ?}$$

Yanıt / The Answer is **12**

11. $$\begin{array}{r|l} 1x3y & 15 \\ \cline{2-2} \underline{-\qquad} & \\ 0 & \end{array} \Rightarrow \mathbf{\sum x = ?}$$

Yanıt / The Answer is **33**

12. $$\begin{array}{r|l} a & b \\ \cline{2-2} \underline{-\quad} & c \\ 5 & \end{array} \qquad \begin{array}{r|l} a & c \\ \cline{2-2} \underline{-\quad} & b+1 \\ 2 & \end{array}$$

$\Rightarrow$ **c = ?**

Yanıt / The Answer is **3**

13. $5-(8:4+4)+8:2+3=?$

Yanıt / The Answer is **6**

14. $1-[18-18:2+3-(6-4):2)]=?$

Yanıt / The Answer is **–10**

15. $A, B, D, C, F \in N$

$(A+B)\cdot(D-C)=42$

$$\begin{array}{r} A \\ -\;B \\ \hline B \end{array} \qquad \begin{array}{r} D \\ -\;C \\ \hline 2F \end{array} \quad \Rightarrow \quad \mathbf{B+F=?}$$

Yanıt / The Answer is **8**

16.

$$\begin{array}{r} 3\,4\,B \\ +\;C\,A\,9 \\ \hline A\,1\,A \end{array} \quad \Rightarrow \quad \mathbf{A+B+C=?}$$

Yanıt / The Answer is **15**

17. $a, b \in N$

$$\left.\begin{array}{l} a\cdot b=24 \\ a-b=5 \end{array}\right\} \Rightarrow \mathbf{a+b=?}$$

Yanıt / The Answer is **11**

18. $a, b, c \in N$

$$\frac{a}{b}+\frac{b}{c}=10 \Rightarrow \mathbf{\min\,(a+b+c)=?}$$

Yanıt / The Answer is **11**

19. $a, b, c \in Z^+$,

$$\left.\begin{array}{l} a \cdot b = 20 \\ b \cdot c = 30 \end{array}\right\} \Rightarrow \mathbf{max(a + b + c) = ?}$$

Yanıt / The Answer is **51**

20. $a, b, c \in N^+$,

$a + b + c = 68 \Rightarrow$ **$\min(a \cdot b \cdot c) = ?$**

Yanıt / The Answer is **66**

21. $x, y, z \in Z^+$,

$A = 3x + 2 = 5y + 2 = 9z + 2 \Rightarrow$ **$\min(A) = ?$**

Yanıt / The Answer is **47**

22. $x, y \in Z^+$,

$300 \cdot x = y^3 \Rightarrow$ **$\min(x + y) = ?$**

Yanıt / The Answer is **120**

23. $x, y \in N^+$,

$(x + y + z) \cdot (x - y - z) = 17 \Rightarrow$ **$x = ?$**

Yanıt / The Answer is **9**

24. $a, b, c \in Z^+$,

$a + b + c = 17 \Rightarrow$ **$\min(a \cdot b \cdot c) = ?$**

Yanıt / The Answer is **15**

1. $x, y, z \in Z^+$, $x \neq y \neq z$

$2x + 3y + 5z = 62 \Rightarrow \mathbf{max(z) = ?}$

Yanıt / The Answer is **11**

---

2. $x, y \in Z^+$,

$x + y = 16 \Rightarrow \mathbf{max(\frac{x \cdot y}{16}) = ?}$

Yanıt / The Answer is **4**

---

3. $a, b \in Z$,

$a^2 - b^2 = 13 \Rightarrow \mathbf{a^2 + b^2 = ?}$

Yanıt / The Answer is **85**

4. $(AB), (BA) \in N$,

$AB - BA = 63$,

$A + B = 9 \Rightarrow \mathbf{\frac{A}{B} = ?}$

Yanıt / The Answer is **8**

---

5. $(AB), (BA) \in N$,

$AB + BA = 99$, $\frac{AB}{BA} = \frac{7}{4} \Rightarrow \mathbf{A \cdot B = ?}$

Yanıt / The Answer is **18**

---

6. $(ab), (ba) \in N$,

$\frac{ab + ba}{ab - ba} = \frac{11}{5} \Rightarrow \mathbf{a - b = ?}$

Yanıt / The Answer is **5**

7. $(ab), (ba) \in N$,

$ab + ba = 5(a + b) + 72$

$\Rightarrow$ **$a + b = ?$**

Yanıt / The Answer is **12**

8. $(3ab), (abc) \in N$,

$3ab - abc = 145$

$\Rightarrow$ **$a + b + c = ?$**

Yanıt / The Answer is **10**

9. $(ab), (ba) \in N$,

$$\left.\begin{array}{l} ab = 7(a + b) \\ ba = k \cdot (a + b) \end{array}\right\} \Rightarrow \mathbf{k = ?}$$

Yanıt / The Answer is **4**

10. $a \neq b$, $(abc), (cba) \in N$,

$abc - cba = 396 \Rightarrow$ **$\max(a + b + c) = ?$**

Yanıt / The Answer is **22**

11. $(AB), (BA) \in N$,

$AB + BA = 3 \cdot (AA) \Rightarrow$ **$\sum A = ?$**

Yanıt / The Answer is **10**

12. $(abc), (cba), (cab) \in N$,

$abc + cba + cab = 2220 \Rightarrow$ **$\min(a) = ?$**

Yanıt / The Answer is **2**

13. $(AB), (BA) \in N$,

$AB + 9 = 3\cdot(BA) \Rightarrow$ $\mathbf{A + B = ?}$

Yanıt / The Answer is **9**

14. $\left.\begin{array}{l} A + 5B = 30 \\ 5A + B = 6 \end{array}\right\} \Rightarrow$ $\mathbf{A + B = ?}$

Yanıt / The Answer is **6**

15. $(xx), (yy), (zz) \in N$,

$$\frac{\mathbf{xx + yy + zz}}{\mathbf{x + y + z}} = \mathbf{?}$$

Yanıt / The Answer is **11**

16. $(AB) \in N$,

$8(A + B) = AB \Rightarrow$ $\mathbf{A\cdot B = ?}$

Yanıt / The Answer is **14**

17. $(AB), (BA), (CC) \in N$,

$AB + BA + CC = 121 \Rightarrow$ $\mathbf{max(ABC) = ?}$

Yanıt / The Answer is **911**

18. $(ABC), (BCA), (CAB) \in N$,

$A + B + C = 5 \Rightarrow$ $\mathbf{ABC + BCA + CAB = ?}$

Yanıt / The Answer is **555**

19. (ABCABC), (ABC) $\in$ N,

$$\frac{\mathbf{ABCABC+ABC}}{\mathbf{6(ABC)}} = \mathbf{?}$$

Yanıt / The Answer is **167**

20. (ab), (cd) $\in$ N,

(ab) $\cdot$ d = 185

(ab) $\cdot$ c = 148

$\Rightarrow$ (ab)·**(cd) = ?**

Yanıt / The Answer is **1665**

21. (AB), (CD) $\in$ N,

$$\left.\begin{array}{l} A\cdot(CD) = 18 \\ B\cdot(CD) = 19 \end{array}\right\} \Rightarrow \mathbf{AB\cdot CD = ?}$$

Yanıt / The Answer is **199**

22. A, B $\in$ N, A $\neq$ B,

A = 10 − 3x

B = 12 + 2x $\Rightarrow$ **max(A·B) = ?**

Yanıt / The Answer is **130**

23. A, B $\in$ N, x $\in$ Z,

A = 11 + x

B = 27 − x $\Rightarrow$ **max(A·B) = ?**

Yanıt / The Answer is **361**

24. x, y, z $\in$ Z^+,

x·y + y·z = 28

$\Rightarrow$ **max(x·y·z) = ?**

Yanıt / The Answer is **196**

1. $1 + 2 + 3 + \ldots\ldots + 23 = ?$

Yanıt / The Answer is **276**

2. $14 + 15 + 16 + \ldots\ldots + 28 = ?$

Yanıt / The Answer is **315**

3. $11 + 12 + 13 + \ldots + 48 = ?$

Yanıt / The Answer is **1121**

4. $1 + 3 + 5 + \ldots\ldots + 37 = ?$

Yanıt / The Answer is **361**

5. $13 + 15 + 17 + \ldots\ldots + 51 = ?$

Yanıt / The Answer is **640**

6. $15 + 17 + \ldots + 2n - 1 = 851 \Rightarrow n = ?$

Yanıt / The Answer is **30**

7. $5 + 7 + 9 + \ldots + 2n - 1 = 140 \Rightarrow$ **$n = ?$**

Yanıt / The Answer is **12**

8. **$2 + 4 + 6 + \ldots\ldots + 42 = ?$**

Yanıt / The Answer is **462**

9. **$12 + 14 + 16 + \ldots\ldots + 36 = ?$**

Yanıt / The Answer is **312**

10. $28 + 30 + 32 + \ldots + A = 1458 \Rightarrow$ **$A = ?$**

Yanıt / The Answer is **80**

11. $A = 22 + 24 + \ldots + 48 \Rightarrow$ **$A = ?$**

Yanıt / The Answer is **490**

12. **$1 + 3 + 5 + \ldots + 27 + 28 + 26 + \ldots + 2 = ?$**

Yanıt / The Answer is **406**

13. $\frac{1}{2}+\frac{2}{3}+\frac{3}{2}+\frac{4}{3}+\ldots\ldots+\frac{35}{2}+12=?$

Yanıt / The Answer is **276**

14. $5 + 12 + 19 + 26 + \ldots + 75 = ?$

Yanıt / The Answer is **440**

15. $-8 - 5 - 2 + 1 + 4 + \ldots + 25 = ?$

Yanıt / The Answer is **102**

16. $6 + 11 + 16 + 21 + \ldots + 41 = ?$

Yanıt / The Answer is **188**

17. $3 - 5 + 7 - 9 + \ldots + 19 - 21 = ?$

Yanıt / The Answer is **–10**

18. $15-18 + 21-24 + 27-30+\ldots+ 63 - 66 = ?$

Yanıt / The Answer is **–27**

19. $a + a + 2 + a + 4 + \ldots + a + 24 = 169$

$\Rightarrow$ **$a = ?$**

Yanıt / The Answer is **1**

---

20. $x + (x + 1) + (x + 2) + \ldots + (x + 10) = A \Rightarrow$ **$x = ?$**

Yanıt / The Answer is $\frac{A - 55}{11}$

---

21. $3 \cdot 4 + 3 \cdot 5 + \ldots + 3 \cdot n = 216 \Rightarrow$ **$n = ?$**

Yanıt / The Answer is **12**

22. $57 + 60 + 63 + \ldots + 123 = A \Rightarrow \frac{A}{5} = ?$

Yanıt / The Answer is **414**

---

23. $A = 4 + 6 + 8 + \ldots + n$

$B = 8 + 10 + 12 + \ldots n$

$A + B = 330 \Rightarrow$ **$B = ?$**

Yanıt / The Answer is **160**

---

24. $8 + 10 + 12 + \ldots + 88 = A$

$5 + 7 + 9 + \ldots + 89 = B$

$\Rightarrow$ **$1 + 2 + 3 + \ldots + 87 + 88 + 89 = ?$**

Yanıt / The Answer is **A + B + 16**

1. $\dfrac{16!-14!}{15!-14!}=?$

Yanıt / The Answer is $\dfrac{239}{14}$

2. $\dfrac{30\cdot 4!+6!}{6!-2\cdot 5!}=?$

Yanıt / The Answer is **3**

3. $\dfrac{10!-6\cdot 8!}{56\cdot 7!}=?$

Yanıt / The Answer is **12**

4. $\dfrac{7!}{6!}+\dfrac{8!}{7!}+\dfrac{9!}{8!}+\ldots+\dfrac{n!}{(n-1)!}=84 \Rightarrow \mathbf{n=?}$

Yanıt / The Answer is **14**

5. $8!-k\cdot 6!=6\cdot 5! \Rightarrow \mathbf{k=?}$

Yanıt / The Answer is **55**

6. $12!+10!=1330\cdot a! \Rightarrow \mathbf{a=?}$

Yanıt / The Answer is **9**

7. $A = 3 \cdot 6 \cdot 9 \cdot 12 \cdot \ldots \cdot 30 \Rightarrow \mathbf{A = ?}$

Yanıt / The Answer is $\mathbf{3^{10} \cdot 10!}$

8. $15! = \dfrac{a}{16} \Rightarrow \mathbf{17! - 16! = ?}$

Yanıt / The Answer is **16a**

9. $\dfrac{(n-2)! + (n-1)! + n!}{(n-2)!} = 64 \Rightarrow \mathbf{n = ?}$

Yanıt / The Answer is **8**

10. $n, m \in N,\ n > 1$

$\dfrac{(n-1)!}{m!} = 120 \quad \Rightarrow \quad \mathbf{\min(n + m) = ?}$

Yanıt / The Answer is **6**

11. $\mathbf{\dfrac{(n-3)! - 2(n-5)!}{(n-4)! - (n-5)!} = ?}$

Yanıt / The Answer is **n – 2**

12. $\dfrac{a! \cdot (2a+1)!}{(a-1)! \cdot (2a+2)!} = \dfrac{4}{9} \Rightarrow \mathbf{a = ?}$

Yanıt / The Answer is **8**

13. $\dfrac{(n+1)!}{n\cdot(n-2)!}=15 \Rightarrow \mathbf{n=?}$

Yanıt / The Answer is **4**

14. $n!+(n+1)!=\dfrac{(n+2)!}{6} \Rightarrow \mathbf{n=?}$

Yanıt / The Answer is **5**

15. $n \in N$

$$\frac{12!+11!+10!}{12!-11!}=\frac{n^2}{121} \Rightarrow \mathbf{n=?}$$

Yanıt / The Answer is **12**

16. $\dfrac{(n+2)!+(n+1)!}{n!+(n+2)\cdot n!}=12 \Rightarrow \mathbf{n=?}$

Yanıt / The Answer is **11**

17. $\mathbf{(4-a)!+(a+1)!+(a-4)!=?}$

Yanıt / The Answer is **122**

18. $A=1!+2!+3!+\ldots+25!$

$$\begin{array}{r|l} A & \underline{\;12\;} \\ \underline{\quad} & \\ k & \end{array} \Rightarrow \mathbf{k=?}$$

Yanıt / The Answer is **9**

19. $n, a \in N^+$,

$35! + 36! = A \cdot 10^n \Rightarrow$ $\sum$ **n = ?**

Yanıt / The Answer is **36**

20. $n, a \in N^+$,

$38! + 39! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

Yanıt / The Answer is **9**

21. $1! + 2! + 3! + \ldots + 28! = \ldots x \Rightarrow$ **x = ?**

Yanıt / The Answer is **3**

22. A, n ∈ N

$38! = 21^n \cdot A \Rightarrow$ **max n) = ?**

Yanıt / The Answer is **5**

23. $x, y, z \in N$,

$11! = 2^x \cdot 3^y \cdot 5^z \cdot m$

$\Rightarrow$ **min(m) = ?**

Yanıt / The Answer is **77**

24. $A, x, y, z \in N$,

$12! = 5^x \cdot 7^y \cdot 11^z \cdot A \Rightarrow$ **max(x + y + z) = ?**

Yanıt / The Answer is **4**

1. $(1023)_4 = (x)_{10} \Rightarrow \mathbf{x = ?}$

Yanıt / The Answer is **75**

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2. $\left.\begin{array}{l} x = (54)_a \\ x = (47)_{a+1} \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The Answer is **39**

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3. $x \in Z$,
$(111)_3 \le (x)_{10} < (122)_3 \Rightarrow \sum \mathbf{x = ?}$

Yanıt / The Answer is **58**

4. $(1b14)_5 = (b53)_7 \Rightarrow \mathbf{b = ?}$

Yanıt / The Answer is **4**

---

5. $(11)_5 = A \Rightarrow \mathbf{A^2 = ?}$

Yanıt / The Answer is **36**

---

6. $\dfrac{\mathbf{(xx)_5 + (yy)_5 + (zz)_5}}{\mathbf{x + y + z}} = \mathbf{?}$

Yanıt / The Answer is **6**

7. $(a3)_{a+1} = 5a \Rightarrow \mathbf{a = ?}$

Yanıt / The Answer is **3**

8. $(1a)_5 + (31)_{a+2} = (A)_{10} \Rightarrow \mathbf{max(A) = ?}$

Yanıt / The Answer is **28**

9. $(1231)_4 + (1011)_2 = (4a0)_5 \Rightarrow \mathbf{a = ?}$

Yanıt / The Answer is **4**

10. $(14)_x + (25)_x = (41)_x \Rightarrow \mathbf{x = ?}$

Yanıt / The Answer is **8**

11. $(111)_{10} = (x)_5 \Rightarrow \mathbf{x = ?}$

Yanıt / The Answer is **421**

12. $a > 4$,

$(4a^2 + a)_{10} = (x)_a \Rightarrow \mathbf{x = ?}$

Yanıt / The Answer is **410**

13. $2^{10} = (x)_4 \Rightarrow$ **$x = ?$**

Yanıt / The Answer is **100000**

14. $4^2 + 4 + 3 = (A)_2 \Rightarrow$ **$A = ?$**

Yanıt / The Answer is **10111**

15. $\sqrt{(144)_a} = (14)_5 \Rightarrow$ **$a = ?$**

Yanıt / The Answer is **7**

16. $(ab)_6 + (ba)_7 = (1ab)_6 \Rightarrow$ **$a + b = ?$**

Yanıt / The Answer is **6**

17. $x > 2$,

$(121)_x = A \Rightarrow$ **$(A)_{x+1} = ?$**

Yanıt / The Answer is **100**

18. $(234)_5 \cdot (23)_5 = (x)_5 \Rightarrow$ **$x = ?$**

Yanıt / The Answer is **12042**

19. $\left.\begin{array}{l}(xyz)_a = 3 \\ (xyzxyz)_a = 84\end{array}\right\} \Rightarrow \mathbf{a^2 = ?}$

Yanıt / The Answer is **9**

20. $(12)_3 \cdot (23)_4 = (x)_5 \Rightarrow \mathbf{x = ?}$

Yanıt / The Answer is **210**

21. $\left.\begin{array}{l}x - y = (21)_4 \\ x + y = (121)_4\end{array}\right\} \Rightarrow \mathbf{(x)_4 = ?}$

Yanıt / The Answer is **101**

22. $(2{,}14)_5 + (12.41)_5 - (1{,}24)_5 = (x)_5 \;=\; \mathbf{x = ?}$

Yanıt / The Answer is **13,31**

23. $(21{,}03)_4 = (A)_{10} \;\Rightarrow\; \mathbf{A = ?}$

Yanıt / The Answer is $\mathbf{\dfrac{147}{16}}$

24. $(12{,}22)_5 = (x)_{10} \;\Rightarrow\; \mathbf{x = ?}$

Yanıt / The Answer is **7,48**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $$\begin{array}{r|l} 238 & 17 \\ \cline{2-2} - \quad & x \\ \cline{1-1} \multicolumn{1}{c}{y} & \end{array} \Rightarrow x - y = ?$$

A) 17 B) 16 C) 15 D) 14 E) 13

2. $$\begin{array}{r|l} A & B \\ \cline{2-2} - \quad & 10 \\ \cline{1-1} \multicolumn{1}{c}{9} & \end{array}$$

$A + B = 130 \Rightarrow$ **$B = ?$**

A) 10 B) 11 C) 12 D) 13 E) 14

3. $$\begin{array}{r|l} aaa0aaa & aaa \\ \cline{2-2} - \quad & x \\ \cline{1-1} \multicolumn{1}{c}{y} & \end{array} \Rightarrow x + y = ?$$

A) 1001 B) 1101 C) 10001
D) 10000 E) 100001

4. $$\begin{array}{r|l} abab3 & ab \\ \cline{2-2} - \quad & x \\ \cline{1-1} \multicolumn{1}{c}{y} & \end{array} \Rightarrow x - y = ?$$

A) 1000 B) 1004 C) 1007
D) 1010 E) 1013

5. $$\begin{array}{r|l} 32132132 & 321 \\ \cline{2-2} - \quad & x \\ \cline{1-1} \multicolumn{1}{c}{y} & \end{array} \Rightarrow x + y = ?$$

A) 100000 B) 100010 C) 100001
D) 100100 E) 100132

6. $$\begin{array}{r|l} A & B \\ \cline{2-2} - \quad & 5 \\ \cline{1-1} \multicolumn{1}{c}{2} & \end{array} \qquad \begin{array}{r|l} B & 6 \\ \cline{2-2} - \quad & C \\ \cline{1-1} \multicolumn{1}{c}{2} & \end{array} \qquad \begin{array}{r|l} A & 30 \\ \cline{2-2} - \quad & \\ \cline{1-1} \multicolumn{1}{c}{?} & \end{array}$$

A) 10 B) 11 C) 12 D) 13 E) 14

7. $B \in \mathbb{N}$,

$$\begin{array}{r|l} A & B \\ \cline{2-2} - \quad & 11 \\ \cline{1-1} \multicolumn{1}{c}{9} & \end{array} \qquad \begin{array}{r|l} C & 11 \\ \cline{2-2} - \quad & 4 \\ \cline{1-1} \multicolumn{1}{c}{B} & \end{array} \Rightarrow A - C = ?$$

A) 61 B) 62 C) 63 D) 64 E) 65

8. $k \in \mathbb{N}$,

$$\begin{array}{r|l} A & 39 \\ \cline{2-2} - \quad & 2 \\ \cline{1-1} \multicolumn{1}{c}{k^2} & \end{array} \Rightarrow \max(A) = ?$$

A) 110 B) 114 C) 120
D) 130 E) 132

9. $A \in \mathbb{Z}$,

$$\begin{array}{r|l} A & 13 \\ \cline{2-2} - & 3 \\ \hline k^2 & \end{array} \Rightarrow \mathbf{max(A) = ?}$$

A) 50 B) 51 C) 52 D) 53 E) 54

10. $(AB), (CD) \in \mathbb{N}$,

$$\left.\begin{array}{l} A \cdot (CD) = 38 \\ B \cdot (CD) = 24 \end{array}\right\} \Rightarrow \mathbf{CD \cdot AB = ?}$$

A) 404 B) 405 C) 406 D) 407 E) 408

11. $$\left.\begin{array}{l} 2A + 3B = 18 \\ 2B + 3A = 22 \end{array}\right\} \Rightarrow \mathbf{A + B = ?}$$

A) 6 B) 7 C) 8 D) 9 E) 10

12. $\mathbf{18 - 2 \cdot 4 + 5 \cdot 4 - 10 = ?}$

A) 74 B) 60 C) 48 D) 24 E) 20

13. $\mathbf{[24 : (-3) - (-5) \cdot (-2)] : [20 - 4 \cdot 3 + 1] = ?}$

A) −2 B) −1 C) 0 D) 1 E) 2

14. $\mathbf{(135 : 5 - 9 \cdot 3 + 1) \cdot (144 : 12 - 2 \cdot 5) = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $$\frac{\mathbf{(-5) \cdot (5) - 3 \cdot 3 + 4}}{\mathbf{3 \cdot 5 - 5 \cdot 8 - 5}} = ?$$

A) −2 B) −1 C) 0 D) 1 E) 2

16. $$\begin{array}{r|l} A & 5 \\ \cline{2-2} - & 8 \\ \hline 2 & \end{array} \qquad \begin{array}{r|l} A+9 & B+2 \\ \cline{2-2} - & 5 \\ \hline x & \end{array} \Rightarrow \mathbf{x = ?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

(KARADENİZ TEKNİK ÜNİVERSİTESİ - YÖS 2016)

Yanıtlar / Answers					
1. D	4. C	7. E	10. A	13. A	16. A
2. B	5. E	8. B	11. C	14. B	
3. C	6. C	9. B	12. E	15. D	

1. $$\begin{array}{r|l} 135 & \underline{12} \\ \underline{-\quad\quad} & A \\ B & \end{array} \Rightarrow \mathbf{A + B = ?}$$

A) 10 B) 11 C) 12 D) 13 E) 14

2. $$\begin{array}{r|l} 2727272 & \underline{27} \\ \underline{-\quad\quad\quad\quad} & A \\ B & \end{array} \Rightarrow \mathbf{A + B = ?}$$

A) 10103 B) 101010 C) 101012
D) 101017 E) 101031

3. $$\begin{array}{r|l} A & \underline{6} \\ \underline{-\quad\quad} & B \\ 5 & \end{array} \qquad \begin{array}{r|l} B & \underline{12} \\ \underline{-\quad\quad} & 3 \\ 9 & \end{array} \Rightarrow \mathbf{A = ?}$$

A) 277 B) 275 C) 274 D) 273 E) 271

4. $$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 12 \\ 4 & \end{array}$$

$A + B = 69 \Rightarrow$ **A = ?**

A) 64 B) 62 C) 60 D) 58 E) 56

5. $$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 4 \\ 3 & \end{array}$$

$A - B = 24 \Rightarrow$ **A = ?**

A) 34 B) 31 C) 28 D) 25 E) 22

6. $$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 6 \\ 4 & \end{array} \qquad \begin{array}{r|l} A + 2 & \underline{B - 1} \\ \underline{-\quad\quad\quad} & 8 \\ 2 & \end{array} \Rightarrow \mathbf{A = ?}$$

A) 34 B) 35 C) 36 D) 37 E) 40

7. $$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 3 \\ 4 & \end{array} \qquad \begin{array}{r|l} B & \underline{C} \\ \underline{-\quad\quad} & 4 \\ 3 & \end{array} \Rightarrow \qquad \begin{array}{r|l} A & \underline{12} \\ \underline{-\quad\quad} & \\ \mathbf{?} & \end{array}$$

A) 5 B) 4 C) 3 D) 2 E) 1

8. $B \in N$,

$$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 12 \\ 5 & \end{array} \qquad \begin{array}{r|l} C & \underline{7} \\ \underline{-\quad\quad} & 9 \\ B & \end{array} \Rightarrow \mathbf{A + C = ?}$$

A) 140 B) 143 C) 146 D) 149 E) 152

9. $A \in N$,

$$\begin{array}{r|l} A & B \\ \cline{2-2} \underline{-\quad} & 16 \\ 4 & \end{array} \quad \Rightarrow \ \min(A) = ?$$

A) 82 B) 84 C) 86 D) 88 E) 90

10. $x \in Z$,

$$\begin{array}{r|l} A & 27 \\ \cline{2-2} \underline{-\quad} & 2 \\ x^2 & \end{array} \quad \Rightarrow \ \max(A) = ?$$

A) 76 B) 77 C) 78 D) 79 E) 80

11. $A \in Z$,

$$\begin{array}{r|l} A & 18 \\ \cline{2-2} \underline{-\quad} & 4 \\ x^2 & \end{array} \quad \Rightarrow \ \max(A) = ?$$

A) 86 B) 87 C) 88 D) 89 E) 90

12. **$12 : 3 - \{[(-1) - (-2) - (-3)] - 2\} = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

13. **$5 + 3 \cdot 4 - 18 : 6 + [2(7 + 8 : 4)] = ?$**

A) 22 B) 24 C) 26 D) 28 E) 32

14. **$-3 + 2 - 4 \cdot (6 : 3 - 7 + 12) = ?$**

A) –29 B) –27 C) –25 D) –23 E) –21

15. **$[8 : 4 - (6 : 3) + 12 \cdot 3] + (30 : 6) \cdot 4 = ?$**

A) 2 B) 18 C) 36 D) 41 E) 56

16. **$[16 : 4 - 4 \cdot 3 + 20] - 20 : 4 = ?$**

A) 1 B) 3 C) 7 D) 9 E) 13

Yanıtlar / Answers

1. E	4. A	7. E	10. D	13. E	16. C
2. C	5. B	8. C	11. D	14. A	
3. B	6. E	9. B	12. B	15. E	

1. $$\begin{array}{r|l} 156 & \underline{13} \\ \underline{-\quad\quad} & x \\ y & \end{array} \Rightarrow \mathbf{x + y = ?}$$

A) 10 B) 11 C) 12 D) 13 E) 14

2. $$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 12 \\ 10 & \end{array}$$

A + B = 166 ⇒ **B = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

3. $$\begin{array}{r|l} A & \underline{B} \\ \underline{-\quad\quad} & 3 \\ 0 & \end{array} \quad \begin{array}{r|l} B & \underline{4} \\ \underline{-\quad\quad} & C \\ 1 & \end{array} \quad \begin{array}{r|l} A & \underline{12} \\ \underline{-\quad\quad} & \\ ? & \end{array}$$

A) 1 B) 2 C) 3 D) 4 E) 5

4. $$\begin{array}{r|l} 1011012 & \underline{101} \\ \underline{-\quad\quad\quad\quad} & A \\ B & \end{array} \Rightarrow \mathbf{A + B = ?}$$

A) 10012 B) 112 C) 10102 D) 10002 E) 10101

5. $$\begin{array}{r|l} abcabc1 & \underline{abc} \\ \underline{-\quad\quad\quad\quad} & A \\ B & \end{array} \Rightarrow \mathbf{A + B = ?}$$

A) 10011 B) 10001 C) 10101 D) 10000 E) 11100

6. $$\begin{array}{r|l} ababab & \underline{ab} \\ \underline{-\quad\quad\quad\quad} & A \\ B & \end{array} \Rightarrow \mathbf{A + B = ?}$$

A) 10101 B) 11111 C) 10000 D) 10011 E) 11011

7. $k \in N$,

$$\begin{array}{r|l} A & \underline{15} \\ \underline{-\quad\quad} & 4 \\ k^2 & \end{array} \Rightarrow \mathbf{max(A) = ?}$$

A) 74 B) 72 C) 69 D) 68 E) 66

8. $A \in Z$,

$$\begin{array}{r|l} A & \underline{16} \\ \underline{-\quad\quad} & 5 \\ k^3 & \end{array} \Rightarrow \mathbf{max(A) = ?}$$

A) 88 B) 92 C) 95 D) 96 E) 100

9. $B \in N$,

$$\begin{array}{r|l} A & \underline{\;B\;} \\ \underline{-\quad\;} & 8 \\ 7 & \end{array} \qquad \begin{array}{r|l} C & \underline{\;9\;} \\ \underline{-\quad\;} & 8 \\ B & \end{array} \quad \Rightarrow \quad \mathbf{A + C = ?}$$

A) 145 B) 147 C) 149 D) 151 E) 152

10. $\left.\begin{array}{l} A + 2B = 17 \\ 2A + B = 13 \end{array}\right\} \Rightarrow \mathbf{A + B = ?}$

A) 7 B) 8 C) 9 D) 10 E) 11

11. $(AB), (CD) \in N$,

$$\left.\begin{array}{l} A \cdot (CD) = 48 \\ B \cdot (CD) = 27 \end{array}\right\} \Rightarrow \begin{array}{r} CD \\ \underline{\times\;\; AB} \\ \mathbf{?} \end{array}$$

A) 504 B) 505 C) 506 D) 507 E) 508

12. $\mathbf{10 - 4 : 2 - (3 + 2 \cdot 6) = ?}$

A) –3 B) –4 C) –5 D) –6 E) –7

13. $\mathbf{[44 : 11 - 18 : 6 - 1] \cdot [654 : 2 - 91 \cdot 5] = ?}$

A) –2 B) –1 C) 0 D) 1 E) 2

14. $\mathbf{[24 - 4(11 - 27 : 9) - (-7)] - 3 \cdot 2 = ?}$

A) –1 B) –3 C) –5 D) –7 E) –9

15. $\mathbf{16 - (8 : 2) + 12 : (-2) + 20 : 4 - 5 = ?}$

A) 2 B) 3 C) 4 D) 5 E) 6

16. **Aşağıdaki bölme işleminde A sayısı en çok kaçtır?**

What is the greatest A number in division below?

$$\begin{array}{r|l} A & \underline{\;20\;} \\ \vdots & x \\ \underline{-\quad\;\vdots} & \\ x^2 & \end{array}$$

A) 100 B) 96 C) 92 D) 90 E) 80

(EGE ÜNİVERSİTESİ - YÖS 2016)

Yanıtlar / Answers					
1. C	4. A	7. C	10. D	13. C	16. B
2. C	5. A	8. C	11. D	14. D	
3. C	6. A	9. D	12. E	15. E	

1. (AB), (BA) $\in$ N,

AB + BA = 77 $\Rightarrow$ **A + B = ?**

A) 3 B) 5 C) 7 D) 9 E) 11

2. (AB), (BA) $\in$ N,

AB – BA = 54 $\Rightarrow$ **A – B = ?**

A) 2 B) 4 C) 6 D) 7 E) 8

3. (AB), (BA) $\in$ N,

AB – BA = 45 $\Rightarrow$ **min(A) = ?**

A) 5 B) 6 C) 7 D) 8 E) 9

4. AB + BA = 110 $\Rightarrow$ **max(AB) = ?**

A) 91 B) 82 C) 73 D) 64 E) 55

5. (AB), (BA) $\in$ N,

AB = BA + 27 $\Rightarrow$ **min(AB) = ?**

A) 30 B) 41 C) 52 D) 63 E) 74

6. (AB), (BA) $\in$ N,

AB + BA = 7(A + B) + 32 $\Rightarrow$ **max(AB) = ?**

A) 92 B) 80 C) 71 D) 62 E) 53

7. (AB), (BA), (BB) $\in$ N,

AB + BA – BB = 44 $\Rightarrow$ **A = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

8. (AB), (BA), (BB) $\in$ N,

$\frac{AB+BA}{BB} = 3$ $\Rightarrow$ **max(A – B) = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

9. $(ABA), (BAB) \in N$,

$ABA + BAB = 1221 \Rightarrow$ **max(A) + min(A) = ?**

A) 12 B) 11 C) 10 D) 9 E) 8

10. $(AB), (BA) \in N$,

$AB + BA = 77$,

$AB - BA = 45 \Rightarrow$ **A·B = ?**

A) 4 B) 5 C) 6 D) 7 E) 8

11. $A, B \in N^+$,

$A + B = 18 \Rightarrow$ **max(A·B) + min(A·B) = ?**

A) 101 B) 100 C) 99 D) 98 E) 97

2. $A, B \in N, A \neq B$

$A + B = 42 \Rightarrow$ **max(A·B) + min(A·B) = ?**

A) 440 B) 452 C) 462 D) 481 E) 484

13. $A, B \in N^+$,

$A \cdot B = 36 \Rightarrow$ **max(A + B) + min(A + B) = ?**

A) 45 B) 48 C) 49 D) 52 E) 56

14. $(ab) \in N$,

$$\left.\begin{array}{l} a \cdot k = 12 \\ b \cdot k = 27 \end{array}\right\} \Rightarrow \mathbf{k \cdot (ab) = ?}$$

A) 127 B) 133 C) 140 D) 144 E) 147

15. $(aa) \in N$,

$(aa)a = 99 \Rightarrow$ **a = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

16. $a, b \in Z^+$,

$(2a + 1) \cdot (b + 2) = 12 \Rightarrow$ **a + b = ?**

A) 3 B) 4 C) 5 D) 6 E) 7

Yanıtlar / Answers

1. C	**4. A**	**7. D**	**10. C**	**13. C**	**16. A**
2. C	**5. B**	**8. D**	**11. D**	**14. E**	
3. B	**6. C**	**9. B**	**12. A**	**15. C**	

1. (AB), (BA) $\in$ N,

AB + BA = 44 $\Rightarrow$ **A + B = ?**

A) 2 B) 3 C) 4 D) 5 E) 6

2. (ABC), (BCA), (CAB) $\in$ N,

ABC + BCA + CAB = 666 $\Rightarrow$ **A + B + C = ?**

A) 3 B) 4 C) 5 D) 6 E) 7

3. (AB), (BA) $\in$ N,

AB – BA = 27 $\Rightarrow$ **A – B = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

4. (AB), (BA) $\in$ N,

AB – BA = 36 $\Rightarrow$ **max(AB) + min(AB) = ?**

A) 140 B) 141 C) 142 D) 143 E) 146

5. (AB), (BA) $\in$ N,

AB – BA = 72 $\Rightarrow$ **BA = ?**

A) 17 B) 18 C) 19 D) 20 E) 21

6. (ABC), (CBA) $\in$ N,

ABC – CBA = 495 $\Rightarrow$ **max(ABC) = ?**

A) 994 B) 984 C) 895 D) 498 E) 495

7. (AB), (BA) $\in$ N,

$$\left.\begin{array}{l} AB + BA = 99 \\ AB - BA = 27 \end{array}\right\} \Rightarrow \mathbf{A \cdot B = ?}$$

A) 21 B) 20 C) 19 D) 18 E) 17

8. (AB), (BA), (AA) $\in$ N,

$$\frac{AB + BA}{AA} = 2 \quad \Rightarrow \quad \mathbf{max(AB) + min(AB) = ?}$$

A) 100 B) 105 C) 110 D) 115 E) 120

9. $(AB), (BA), (AA) \in N$,

$AB + BA - AA = 33 \Rightarrow$ **$B = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

10. $A \neq B \neq C$, $(ABC), (CBA) \in N$,

$ABC - CBA = 99 \Rightarrow$ **$\max(ABC) = ?$**

A) 998 B) 988 C) 978 D) 987 E) 897

11. $(A0B), (BA0) \in N$,

$A0B + BA0 = 211 \Rightarrow$ **$AB = ?$**

A) 10 B) 11 C) 12 D) 13 E) 14

12. $A, B \in N^+$,

$A + B = 16 \Rightarrow$ **$\max(A \cdot B) - \min(A \cdot B) = ?$**

A) 49 B) 50 C) 51 D) 52 E) 53

13. $A, B \in N$,

$A + B = 48 \Rightarrow$ **$\min(A \cdot B) = ?$**

A) 0 B) 47 C) 218 D) 320 E) 576

14. $A, B \in N^+$,

$A \cdot B = 57 \Rightarrow$ **$\max(A + B) + \min(A + B) = ?$**

A) 50 B) 60 C) 70 D) 80 E) 90

15. $A, B \in N^+$, $B > 1$,

$(2 \cdot A) \cdot (2 \cdot B + 1) = 18 \Rightarrow$ **$A \cdot B = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

16. **ABC üç basamaklı ve AB iki basamaklı sayılar olmak üzere**

ABC being a three - digit number and AB a two - digit number

$ABC - AB = 353 \Rightarrow A + B + C = ?$

A) 10 B) 11 C) 12 D) 13 E) 14

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. C	4. E	7. D	10. C	13. A	16. E
2. D	5. C	8. C	11. B	14. D	
3. C	6. A	9. C	12. A	15. D	

1. $\mathbf{5 + 6 + 7 + \ldots + 24 = ?}$

A) 280 B) 290 C) 300 D) 310 E) 320

2. $\mathbf{1 + 3 + 5 + \ldots + 23 = ?}$

A) 100 B) 121 C) 144 D) 169 E) 225

3. $\mathbf{2 + 4 + 6 + \ldots + 38 = ?}$

A) 190 B) 230 C) 300 D) 380 E) 400

4. $1 + 2 + 3 + \ldots + n = 55 \Rightarrow$ **n = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

5. $\mathbf{7 + 14 + \ldots + 140 = ?}$

A) 1390 B) 1410 C) 1460 D) 1470 E) 1500

6. $\mathbf{12 + 15 + 18 + \ldots\ldots + 54 = ?}$

A) 490 B) 495 C) 500 D) 505 E) 510

7. $\mathbf{1 - 2 + 3 - 4 + \ldots + 29 - 30 = ?}$

A) –11 B) –12 C) –13 D) –14 E) –15

8. $1 \cdot a + 2 \cdot a + 3 \cdot a + \ldots + 20 \cdot a = 105 \Rightarrow$ **a = ?**

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

9. $A = 1\cdot2 + 2\cdot3 + 3\cdot4 + \ldots\ldots + 10\cdot11$

$B = 3\cdot8 + 6\cdot12 + 9\cdot16 + \ldots\ldots + 30\cdot44$

$\Rightarrow \mathbf{\frac{B}{A} = ?}$

A) 3 B) 4 C) 6 D) 12 E) 16

10. $A = 1 + 2 + 3 + \ldots + n$

$B = 10 + 11 + 12 + \ldots + n - 1$

$A - B = 90 \Rightarrow \mathbf{n = ?}$

A) 41 B) 42 C) 43 D) 44 E) 45

11. $A = 1\cdot2 + 2\cdot4 + 3\cdot6 + \ldots\ldots + 14\cdot28$

$B = 1\cdot3 + 2\cdot5 + 3\cdot7 + \ldots\ldots + 14\cdot29$

$\Rightarrow \mathbf{B = ?}$

A) A – 5 B) A + 25 C) A + 45 D) A + 90 E) A + 105

12. $a + (a + 1) + (a + 2) + \ldots\ldots + (a + 12) = 130$

$\Rightarrow \mathbf{a = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

13. $A = 10 + 20 + \ldots\ldots + 110$

$B = 8 + 16 + \ldots\ldots + 88$

$\Rightarrow \mathbf{\frac{A}{B} = ?}$

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $\frac{3}{4}$ D) 1 E) $\frac{5}{4}$

14. $A = 4 + 5 + 6 + \ldots\ldots + 18$

$B = 5 + 8 + 11 + \ldots\ldots + 47$

$\Rightarrow \mathbf{B - A = ?}$

A) 200 B) 205 C) 215 D) 220 E) 225

15. $\mathbf{-1 - 2 - 3 - \ldots - 14 + 15 + 14 + \ldots + 3 = ?}$

A) 12 B) 13 C) 14 D) 15 E) 16

16. $x = 1\cdot2\cdot3 + 2\cdot3\cdot4 + \ldots + 14\cdot15\cdot16$

$\Rightarrow \mathbf{4\cdot6\cdot8 + 6\cdot8\cdot10 + \ldots + 28\cdot30\cdot32 = ?}$

A) x – 6 B) x + 4 C) 4x – 32 D) 8x – 48 E) 8x

Yanıtlar / Answers

1. B	**4. A**	**7. E**	**10. E**	**13. E**	**16. D**
2. C	**5. D**	**8. B**	**11. E**	**14. E**	
3. D	**6. B**	**9. D**	**12. D**	**15. A**	

1. **1 + 2 + 3 + 4 + ... + 25 = ?**

A) 320 B) 325 C) 330 D) 335 E) 340

2. **16 + 17 + 18 + ... + 32 = ?**

A) 408 B) 404 C) 400 D) 396 E) 392

3. 1 + 2 + 3 + 4 + ... + n = 136 ⇒ **n = ?**

A) 13 B) 14 C) 15 D) 16 E) 17

4. **2 + 4 + 6 + ... + 28 = ?**

A) 200 B) 206 C) 210 D) 214 E) 218

5. **12 + 14 + 16 + ... + 40 = ?**

A) 378 B) 382 C) 386 D) 390 E) 394

6. **1 + 3 + 5 + 7 + ... + 47 = ?**

A) 529 B) 538 C) 557 D) 564 E) 576

7. **13 + 15 + 17 + ... + 37 = ?**

A) 300 B) 305 C) 310 D) 315 E) 325

8. **6 + 11 + 16 + ... + 66 = ?**

A) 468 B) 464 C) 460 D) 456 E) 452

9. **7 + 11 + 15 + ... + 79 = ?**

A) 811 B) 814 C) 817 D) 820 E) 823

10. **1 – 2 + 3 – 4 + 5 – 6 + ... + 31 – 32 = ?**

A) –12 B) –14 C) –16 D) –18 E) –20

11. **4 – 5 + 6 – 7 + 8 – 9 + ... + 18 – 19 + 20 = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

12. $A = 12 + 13 + 14 + \ldots + n$

$B = 1 + 2 + 3 + 4 + \ldots + n$

$\Rightarrow$ **B – A = ?**

A) 54 B) 56 C) 62 D) 64 E) 66

13. $A = 1 + 2 + 3 + \ldots + n - 2$

$B = 15 + 16 + \ldots + n$

$A - B = 42 \Rightarrow$ **n = ?**

A) 30 B) 31 C) 32 D) 33 E) 34

14. $A = 1{\cdot}2 + 2{\cdot}4 + 3{\cdot}6 + 4{\cdot}8 + \ldots + 12{\cdot}24$

$B = 1{\cdot}3 + 2{\cdot}5 + 3{\cdot}7 + 4{\cdot}9 + \ldots + 12{\cdot}25$

$\Rightarrow$ **B = ?**

A) A + 10 B) A + 12 C) A + 14

D) A + 16 E) A + 78

15. $a + (a + 1) + (a + 2) + \ldots + (a + 17) = 207$

$\Rightarrow$ **a = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

16. **–12 – 5 + 2 + 9 + ... + 79 = ?**

A) 460 B) 463 C) 466 D) 469 E) 472

Yanıtlar / Answers

1. B	4. C	7. E	10. C	13. C	16. D
2. A	5. D	8. A	11. C	14. E	
3. D	6. E	9. C	12. E	15. C	

1. **$1 + 3 + 5 + \ldots + 21 = ?$**

A) 120 B) 121 C) 122 D) 123 E) 124

2. **$2 + 4 + 6 + \ldots + 44 = ?$**

A) 502 B) 504 C) 506 D) 508 E) 510

3. **$9 + 11 + 13 + \ldots + 29 = ?$**

A) 203 B) 205 C) 207 D) 209 E) 211

4. $1 + 2 + 3 + \ldots + n = 210 \Rightarrow$ **$n = ?$**

A) 18 B) 19 C) 20 D) 21 E) 22

5. **$6 + 12 + 18 + \ldots + 96 = ?$**

A) 814 B) 815 C) 816 D) 817 E) 818

6. $(a + 1) + (a + 2) + \ldots + (a + 9) + 10 = 64 \Rightarrow$ **$a = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

7. **$-10 - 8 - 6 - \ldots - 2 + 1 + 3 + 5 + \ldots + 23 = ?$**

A) 110 B) 111 C) 112 D) 113 E) 114

8. **$6 - 7 + 8 - 9 + \ldots + 20 - 21 + 17 = ?$**

A) 1 B) 3 C) 5 D) 7 E) 9

9. $A = 1 + 2 + 3 + \ldots + n - 1$

$B = 11 + 12 + \ldots + n$

$A - B = 5 \Rightarrow$ **n = ?**

A) 30 B) 40 C) 50 D) 60 E) 70

10. $A = 1 \cdot 2 + 2 \cdot 4 + 3 \cdot 6 + \ldots + 10 \cdot 20$

$B = 1 \cdot 3 + 2 \cdot 5 + 3 \cdot 7 + \ldots + 10 \cdot 21$

$\Rightarrow$ **B = ?**

A) 50 – A B) 55 + A C) 60 – A D) 50 + A E) 40 + A

11. $\frac{1}{5}+\frac{2}{5}+\frac{3}{5}+\ldots+\frac{14}{5}=A$

$\frac{1}{6}+\frac{3}{6}+\frac{5}{6}+\ldots+\frac{11}{6}=B$

$\Rightarrow$ **A – B = ?**

A) 5 B) 10 C) 15 D) 20 E) 25

12. $A = 1 + 3 + 5 + \ldots + 25$

$B = 2 + 4 + 6 + \ldots + 26 \Rightarrow$ **B – A = ?**

A) 11 B) 12 C) 13 D) 14 E) 15

13. $\dfrac{\mathbf{4+8+12+\ldots+104}}{\mathbf{3+6+9+\ldots+78}} = ?$

A) 1 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) $\frac{4}{3}$ E) $\frac{3}{4}$

14. $2n + (2n + 1) + (2n + 2) + \ldots + (2n + 12) = 52$

$\Rightarrow$ **n = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

15. **$1 + 3 + 5 + \ldots + 29 - 28 - 26 - \ldots - 2 = ?$**

A) 5 B) 10 C) 15 D) 20 E) 25

16. **$2 - 5 + 8 - 11 + \ldots\ldots\ldots\ldots\ldots 92 - 95 + 98 = ?$**

A) 54 B) 50 C) 0 D) –50 E) –54

(EGE ÜNİVERSİTESİ - YÖS 2016)

Yanıtlar / Answers

1. B	4. C	7. E	10. B	13. D	16. B
2. C	5. C	8. E	11. C	14. B	
3. D	6. A	9. C	12. C	15. C	

1. $\dfrac{\mathbf{2!+3!+4!}}{\mathbf{5!}}=\mathbf{?}$

A) $\dfrac{1}{15}$ B) $\dfrac{2}{15}$ C) $\dfrac{1}{5}$ D) $\dfrac{4}{15}$ E) $\dfrac{1}{3}$

2. $42 \cdot 5! = n(n-1)! \Rightarrow$ **n = ?**

A) 5 B) 6 C) 7 D) 8 E) 9

3. $\dfrac{n!}{(n-1)!}+\dfrac{(n-1)!}{(n-2)!}+\dfrac{(n-2)!}{(n-3)!}=30 \Rightarrow$ **n = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

4. $\dfrac{(n-3)!}{(n-4)!}\cdot\dfrac{(n+3)!}{(n+2)!}=16 \Rightarrow \dfrac{\mathbf{n!}}{\mathbf{4!}}=\mathbf{?}$

A) 4 B) 5 C) 6 D) 7 E) 8

5. $\dfrac{(2n-1)!}{(2n-2)!}\cdot\dfrac{(n-1)!}{n!}=\dfrac{11}{6} \Rightarrow$ **n = ?**

A) 4 B) 5 C) 6 D) 7 E) 8

6. a, b ∈ N,

$\dfrac{a!}{b!}=120 \Rightarrow$ **min(a + b) + max(a + b) = ?**

A) 5 B) 11 C) 15 D) 120 E) 244

7. n, A ∈ N,

$49! = A \cdot 7^n \Rightarrow$ **max(n) = ?**

A) 7 B) 8 C) 9 D) 10 E) 11

8. n, A ∈ N,

$30! = A \cdot 9^n \Rightarrow$ **max(n) = ?**

A) 14 B) 12 C) 9 D) 7 E) 5

9. $n, A \in \mathbb{N}$,

$42! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 9 B) 16 C) 17 D) 21 E) 27

10. $n, A \in \mathbb{N}$,

$17! = A \cdot 4^n \Rightarrow \sum n = ?$

A) 20 B) 22 C) 24 D) 26 E) 28

11. $51! - 3 = \ldots\ldots \underbrace{999\ldots9}_{\text{n tane / times}}7 \Rightarrow$ **n = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

12. $a, b, c \in \mathbb{N}$,

$$\frac{35!}{5^a \cdot 7^b} = c \Rightarrow \max(a+b) = ?$$

A) 13 B) 14 C) 15 D) 16 E) 17

13. $40! - 123 = \ldots\ldots abc \Rightarrow$ **a + b + c = ?**

A) 15 B) 17 C) 22 D) 24 E) 27

14. $A = 0! + 1! + 2! + \ldots + 29!$

$$\Rightarrow \begin{array}{r|l} A & \underline{\;6\;} \\ \underline{-\quad\;} & \\ ? & \end{array}$$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $n, A \in \mathbb{N}$,

$12! + 19! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 2 B) 3 C) 5 D) 8 E) 10

16. $n, A \in \mathbb{N}$,

$33! + 34! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 6 B) 8 C) 11 D) 14 E) 16

Yanıtlar / Answers

1. D	**4. B**	**7. B**	**10. E**	**13. C**	**16. B**
2. C	**5. C**	**8. D**	**11. B**	**14. D**	
3. B	**6. E**	**9. A**	**12. A**	**15. A**	

1. $13! = x \cdot 12! \Rightarrow$ **x = ?**

A) 13 B) 12 C) 11 D) 10 E) 9

2. $\frac{8!+9!}{9!} = ?$

A) 1 B) $\frac{9}{8}$ C) $\frac{10}{9}$ D) $\frac{8}{9}$ E) $\frac{9}{10}$

3. $\frac{4!+5!+6!}{4!+5!} = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

4. $7! \cdot x + 8! \cdot x = 10! \Rightarrow$ **x = ?**

A) 80 B) 72 C) 63 D) 54 E) 45

5. $\frac{(n-2)!}{(n-3)!} = 10 \Rightarrow$ **n = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

6. $\frac{(n-1)!}{(n-2)!} + \frac{(n+3)!}{(n+2)!} = 18 \Rightarrow$ **n = ?**

A) 5 B) 6 C) 7 D) 8 E) 9

7. $\frac{n!}{7!} = 72 \Rightarrow$ **n = ?**

A) 8 B) 9 C) 10 D) 11 E) 12

8. $n, A \in N,$

$48! = A \cdot 5^n \Rightarrow$ **max(n) = ?**

A) 7 B) 8 C) 9 D) 10 E) 11

9. $n, A \in \mathbb{N}$,

$34! = A \cdot 3^n \Rightarrow$ **max(n) = ?**

A) 11 B) 12 C) 13 D) 14 E) 15

10. $A, n \in \mathbb{N}$,

$38! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 7 B) 8 C) 9 D) 10 E) 11

11. $A, n \in \mathbb{N}$,

$27! = A \cdot 6^n \Rightarrow$ **max(n) = ?**

A) 9 B) 10 C) 11 D) 12 E) 13

12. $A, n \in \mathbb{N}$,

$43! = A \cdot 4^n \Rightarrow$ **max(n) = ?**

A) 19 B) 24 C) 30 D) 33 E) 39

13. $A, n \in \mathbb{N}$,

$36! + 39! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 8 B) 12 C) 14 D) 16 E) 20

14. $A = \dfrac{(n-4)!+n!}{(4-n)!+4} \Rightarrow$ **A = ?**

A) 1 B) 5 C) 12 D) 24 E) 25

15. $A = 1! + 2! + 3! + \dots + 48!$

$$\begin{array}{r|l} A & 6 \\ \cline{2-2} \underline{-\quad} & \\ x & \end{array} \Rightarrow \mathbf{x = ?}$$

A) 0 B) 1 C) 2 D) 3 E) 4

16. $\dfrac{16!+17!}{18!} = ?$

A) $\dfrac{1}{9}$ B) $\dfrac{1}{14}$ C) $\dfrac{1}{15}$ D) $\dfrac{1}{16}$ E) $\dfrac{1}{17}$

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Yanıtlar / Answers

1. A	**4. A**	**7. B**	**10. B**	**13. A**	**16. E**
2. C	**5. C**	**8. D**	**11. E**	**14. B**	
3. C	**6. D**	**9. E**	**12. A**	**15. D**	

1. $\dfrac{5!+6!}{5!} = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

2. $21! = a \cdot 20! \Rightarrow$ **a = ?**

A) 20 B) 21 C) 22 D) 23 E) 24

3.
$$\begin{array}{r|l} 8!+9! & \underline{7!} \\ -\underline{\qquad\qquad} & \\ ? & \end{array}$$

A) 0 B) 1 C) 2 D) 3 E) 4

4. $\dfrac{(n-1)!}{(n-2)!} + \dfrac{(n+2)!}{(n+1)!} + \dfrac{n!}{(n-1)!} = 61$

$\Rightarrow$ **n = ?**

A) 16 B) 19 C) 20 D) 21 E) 25

5. $\dfrac{x!}{9!} = 110 \Rightarrow$ **x = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

6. $\dfrac{(n+1)!}{(n-1)!} = 72 \Rightarrow$ **n = ?**

A) 10 B) 9 C) 8 D) 7 E) 6

7. $a, b \in N$,

$\dfrac{a!}{b!} = 720 \Rightarrow$ **max(a + b) = ?**

A) 6 B) 7 C) 720 D) 721 E) 1439

8. $x, y \in N$,

$\dfrac{x!}{y!} = 6 \Rightarrow$ **$\sum(x + y) = ?$**

A) 10 B) 12 C) 14 D) 16 E) 18

9. $n, A \in \mathbb{N}$,

$24! = A \cdot 3^n \Rightarrow$ **max(n) = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

10. $n, A \in \mathbb{N}$,

$20! = A \cdot 4^n \Rightarrow$ **max(n) = ?**

A) 10 B) 9 C) 8 D) 7 E) 6

11. $n, A \in \mathbb{N}$,

$29! = A \cdot 6^n \Rightarrow$ **max(n) = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

12. $n, A \in \mathbb{N}$,

$40! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 10 B) 9 C) 8 D) 7 E) 6

13. $40! - 1 = \ldots\ldots \underbrace{999\ldots9}_{\text{n tane / times}} \Rightarrow$ **n = ?**

A) 10 B) 9 C) 8 D) 7 E) 6

14. $A = 1! + 2! + 3! + \ldots + 19!$

$$\Rightarrow \begin{array}{r|l} A & 5 \\ \cline{2-2} \underline{-\quad\;} & \\ ? & \end{array}$$

A) 0 B) 1 C) 2 D) 3 E) 4

15. $n, A \in \mathbb{N}$,

$15! + 25! = A \cdot 10^n \Rightarrow$ **max(n) = ?**

A) 3 B) 5 C) 6 D) 9 E) 10

16. $A, x \in \mathbb{N}$

$45! = 9^x.A$

Eşitliğini sağlayan en büyük x sayısı kaçtır?

What is the greatest x number satisfying the above equality?

A) 10 B) 9 C) 7 D) 6 E) 5

(EGE ÜNİVERSİTESİ - YÖS 2016)

Yanıtlar / Answers

1. D	**4. C**	**7. E**	**10. B**	**13. B**	**16. A**
2. B	**5. B**	**8. E**	**11. D**	**14. D**	
3. A	**6. C**	**9. A**	**12. B**	**15. A**	

1. $(324)_5 = (x)_{10} \Rightarrow$ **x = ?**

A) 89 B) 79 C) 69 D) 59 E) 49

2. $(101)_2 + (201)_3 + (111)_4 = (x)_{10} \Rightarrow$ **x = ?**

A) 36 B) 41 C) 45 D) 49 E) 54

3. $(56)_{10} = (x)_5 \Rightarrow$ **x = ?**

A) 209 B) 210 C) 211 D) 212 E) 213

4. $(47)_8 + (36)_8 + (24)_8 = (x)_8 \Rightarrow$ **x = ?**

A) 123 B) 131 C) 137 D) 141 E) 146

5. $(86)_9 = (x)_7 \Rightarrow$ **x = ?**

A) 126 B) 134 C) 141 D) 146 E) 151

6. $(1023)_6 - (515)_6 = (x)_6 \Rightarrow$ **x = ?**

A) 104 B) 204 C) 210 D) 230 E) 240

7. $(25)_7 \cdot (16)_7 = (x)_7 \Rightarrow$ **x = ?**

A) 401 B) 431 C) 440 D) 456 E) 502

8. $(3a4)_6 + (114)_a = (x)_{10} \Rightarrow$ **x = ?**

A) 170 B) 174 C) 176 D) 180 E) 182

9. $(abb)_5 = (bba)_6 \Rightarrow \mathbf{a \cdot b = ?}$

A) 6 B) 10 C) 12 D) 15 E) 16

10. $(134)_n = 58 \Rightarrow \mathbf{n = ?}$

A) 5 B) 6 C) 7 D) 8 E) 9

11. $9^3 + 2 \cdot 9 + 8 = (A)_9 \Rightarrow \mathbf{A = ?}$

A) 1028 B) 1208 C) 1008 D) 1080 E) 1128

12. $x^3 + 3x^2 + 3x + 2 = (A)_{x+1} \Rightarrow \mathbf{A = ?}$

A) 100 B) 101 C) 102 D) 1001 E) 1002

13. $(54)_x = (A)_{10} \Rightarrow \mathbf{min(A) = ?}$

A) 30 B) 31 C) 32 D) 33 E) 34

14. $2^5 + 2^3 + 3 = (A)_4 \Rightarrow \mathbf{A = ?}$

A) 220 B) 221 C) 203 D) 223 E) 232

15. $\frac{33}{2} = (A)_6 \Rightarrow \mathbf{A = ?}$

A) 24,3 B) 23,4 C) 21,4 D) 24,4 E) 24,9

16. $(10{,}11)_3 = (A)_{10} \Rightarrow \mathbf{A = ?}$

A) $\frac{29}{9}$ B) $\frac{10}{3}$ C) $\frac{31}{9}$ D) $\frac{32}{9}$ E) $\frac{11}{3}$

Yanıtlar / Answers

1. A	**4. B**	**7. E**	**10. B**	**13. E**	**16. C**
2. C	**5. C**	**8. C**	**11. A**	**14. D**	
3. C	**6. A**	**9. A**	**12. D**	**15. A**	

1. $(234)_6 = (x)_{10} \Rightarrow$ **x = ?**

A) 92 B) 94 C) 96 D) 98 E) 100

2. $(2a5)_7 = (131)_{10} \Rightarrow$ **a = ?**

A) 2 B) 3 C) 4 D) 5 E) 6

3. $(4ab)_6 = 162 \Rightarrow$ **a + b = ?**

A) 3 B) 4 C) 5 D) 6 E) 7

4. $(142)_6 + (214)_5 + (113)_4 = (x)_{10} \Rightarrow$ **x = ?**

A) 144 B) 128 C) 124 D) 121 E) 71

5. $(94)_{10} = (x)_5 \Rightarrow$ **x = ?**

A) 334 B) 343 C) 321 D) 304 E) 244

6. $(46)_{10} = (x)_4 \Rightarrow$ **x = ?**

A) 233 B) 232 C) 230 D) 133 E) 132

7. $(235)_7 = (a4a)_5 \Rightarrow$ **a = ?**

A) 0 B) 1 C) 2 D) 3 E) 4

8. $(68)_9 = (x)_5 \Rightarrow$ **x = ?**

A) 224 B) 223 C) 222 D) 221 E) 220

9. $A = 4 \cdot 6^5 + 2 \cdot 6^4 + 3 \cdot 6^3 + 2 \cdot 6^2 + 6 + 4 \Rightarrow \mathbf{(A)_6 = ?}$

A) 432214 B) 42324 C) 423241

D) 423214 E) 43214

10. $A = 4^2 + 4 + 1 \Rightarrow \mathbf{(A)_2 = ?}$

A) 111 B) 1011 C) 1010

D) 10101 E) 11010

11. $(44)_5 + (32)_5 + (14)_5 = (x)_5 \Rightarrow \mathbf{x = ?}$

A) 134 B) 144 C) 200 D) 234 E) 244

12. $(36)_8 + (42)_8 = (x)_8 \Rightarrow \mathbf{x = ?}$

A) 77 B) 100 C) 117 D) 127 E) 137

13. $(426)_8 - (137)_8 = (x)_8 \Rightarrow \mathbf{x = ?}$

A) 267 B) 266 C) 265 D) 264 E) 263

14. $(35)_7 \cdot (42)_7 = (A)_7 \Rightarrow \mathbf{A = ?}$

A) 2166 B) 2163 C) 2056 D) 2053 E) 2050

15. $(15a)_6 = (241)_a \Rightarrow \mathbf{a = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

16. $(21{,}5)_6 = (x)_{10} \Rightarrow \mathbf{x = ?}$

A) $\frac{40}{3}$ B) $\frac{27}{2}$ C) $\frac{41}{3}$ D) $\frac{83}{6}$ E) 14

Yanıtlar / Answers

1. B	4. A	7. E	10. D	13. A	16. D
2. C	5. A	8. C	11. C	14. B	
3. A	6. B	9. D	12. B	15. E	

1. $(1203)_4 = (x)_{10} \Rightarrow$ **x = ?**

A) 79 B) 83 C) 89 D) 96 E) 99

2. $(2n5)_6 = (83)_{10} \Rightarrow$ **n = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

3. $(102)_3 + (203)_4 = (x)_{10} \Rightarrow$ **x = ?**

A) 45 B) 46 C) 47 D) 48 E) 49

4. $(49)_{10} = (x)_6 \Rightarrow$ **x = ?**

A) 102 B) 100 C) 101 D) 121 E) 210

5. $(55)_{10} = (x)_5 \Rightarrow$ **x = ?**

A) 102 B) 100 C) 101 D) 121 E) 210

6. $(a4a)_5 = (200)_6 \Rightarrow$ **a = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

7. $(77)_8 = (x)_6 \Rightarrow$ **x = ?**

A) 140 B) 141 C) 142 D) 143 E) 144

8. $(12)_3 + (20)_3 + (22)_3 = (x)_3 \Rightarrow$ **x = ?**

A) 102 B) 200 C) 201 D) 202 E) 221

yos lovers

9. $(478)_9 - (288)_9 = (A)_9 \Rightarrow$ **A = ?**

A) 180 B) 181 C) 182 D) 183 E) 184

10. $(34)_5 \cdot (33)_5 = (A)_5 \Rightarrow$ **A = ?**

A) 2332 B) 2232 C) 2132 D) 2333 E) 3232

11. $4^4 = (A)_4 \Rightarrow$ **A = ?**

A) 1000 B) 10000 C) 100000 D) 3333 E) 33333

12. $(x43)_6 + (432)_x = (A)_{10} \Rightarrow$ **A = ?**

A) 322 B) 323 C) 324 D) 325 E) 326

13. $9^3 + 1 = (x)_9 \Rightarrow$ **x = ?**

A) 1010 B) 1000 C) 1110 D) 1001 E) 1111

14. $x \in N^+$,

$2x^3 + x + 1 = (A)_x \Rightarrow$ **A = ?**

A) 1010 B) 2010 C) 2011 D) 2101 E) 211

15. $(46)_x = (A)_{10} \Rightarrow$ **min(A) = ?**

A) 30 B) 31 C) 32 D) 33 E) 34

16. $(xy)_7 = (yx)_9$

x + y = ?

A) 4 B) 5 C) 7 D) 11 E) 12

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Yanıtlar / Answers

1. E	**4. D**	**7. D**	**10. A**	**13. D**	**16. C**
2. A	**5. E**	**8. C**	**11. B**	**14. C**	
3. B	**6. B**	**9. A**	**12. C**	**15. E**	

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $\frac{1}{3}-\left(\frac{1}{2}+\frac{1}{3}\right)+\left(\frac{2}{3}+\frac{1}{2}\right)=?$

Yanıt / The answer is $\frac{2}{3}$

2. $\frac{1}{63}-\left(\frac{1}{64}+\frac{1}{63}\right)+\left(\frac{2}{3}+\frac{1}{64}\right)=?$

Yanıt / The answer is $\frac{2}{3}$

3. $\dfrac{33\frac{1}{2}-29\frac{1}{3}}{16\frac{2}{3}}=?$

Yanıt / The answer is $\frac{1}{4}$

4. $1-\dfrac{1}{1-\dfrac{2}{1-\dfrac{3}{2}}}=?$

Yanıt / The answer is $\frac{4}{5}$

5. $\dfrac{2\frac{1}{2}}{\left(\frac{7}{2}-1\right):\left(2\frac{1}{2}-\frac{7}{4}\right)}=?$

Yanıt / The answer is $\frac{3}{4}$

6. $\frac{3}{8}-\dfrac{\frac{3}{4}}{1+\dfrac{1}{1-\frac{1}{2}}}=?$

Yanıt / The answer is $\frac{1}{8}$

7. $\dfrac{\dfrac{3}{5}}{4}-\dfrac{3}{\dfrac{5}{4}}=?$

Yanıt / The answer is $-\dfrac{9}{4}$

---

8. $\dfrac{\left(3-\dfrac{1}{3}\right)+\left(\dfrac{1}{3}+3\right)}{\left(5+\dfrac{6}{5}\right)-\left(5+\dfrac{1}{5}\right)}=?$

Yanıt / The answer is **6**

---

9. $\dfrac{24\cdot\left(\dfrac{1}{4}+\dfrac{1}{6}\right)}{\dfrac{1}{4}+6}=?$

Yanıt / The answer is $\dfrac{8}{5}$

10. $\dfrac{\dfrac{1}{3}+\dfrac{1}{\dfrac{1}{3}+\dfrac{1}{\dfrac{1}{3}}}}{\dfrac{1}{3}+\dfrac{1}{\dfrac{1}{3}}}=?$

Yanıt / The answer is **0,19**

---

11. $\left(\dfrac{1-\dfrac{2}{5}}{1+\dfrac{2}{5}}\right):\left(1-\dfrac{1}{-\dfrac{3}{4}}\right)=?$

Yanıt / The answer is $\dfrac{9}{49}$

---

12. $\left(1-\dfrac{1}{2'}\right)\cdot\left(1+\dfrac{1}{2}\right)\cdot\left(1+\dfrac{1}{4}\right)=1-\dfrac{1}{2^x}\Rightarrow \mathbf{x=?}$

Yanıt / The answer is **4**

13. $$\frac{1}{\frac{1}{x}-1}+\frac{1}{1-\frac{1}{x}}=?$$

Yanıt / The answer is **0**

---

14. $$\left(1-\frac{1}{2}\right)+\left(2-\frac{1}{2}\right)+\ldots\ldots+\left(n-\frac{1}{2}\right)=72$$

$\Rightarrow$ **n = ?**

Yanıt / The answer is **12**

---

15. $$\frac{15}{4-\frac{1}{3-\frac{1}{x}}}-2=3 \Rightarrow \mathbf{x=?}$$

Yanıt / The answer is $\frac{1}{2}$

---

16. $$6-\frac{2}{3+\frac{1}{2-\frac{1}{4-\frac{2}{x}}}}=5 \Rightarrow \mathbf{x=?}$$

Yanıt / The answer is $\frac{6}{11}$

---

17. $$\frac{68}{72}+\frac{142}{73}+\frac{209}{71}=a$$

$$\Rightarrow \frac{1}{73}+\frac{1}{72}+\frac{1}{71}=?$$

Yanıt / The answer is $\frac{6-a}{4}$

---

18. $$1-\frac{2}{1+\frac{2}{1+\frac{2}{1+\frac{2}{\vdots}}}}=?$$

Yanıt / The answer is **0**

19. $1+\cfrac{6}{1+\cfrac{6}{1+\cfrac{6}{\vdots}}}=?$

Yanıt / The answer is **3**

20. $x \neq 0,\ y \neq 0;\ z > 0,$

$$\frac{\frac{3x}{y}}{z}=\frac{x}{\frac{27y}{z}} \Rightarrow z=?$$

Yanıt / The answer is **9**

21. $\dfrac{0{,}4}{0{,}032}+\dfrac{0{,}05}{0{,}0002}-\dfrac{3}{0{,}02}=?$

Yanıt / The answer is **112,5**

22. $\dfrac{0{,}0016}{0{,}03}\cdot\dfrac{0{,}04}{0{,}012}=?$

Yanıt / The answer is **0,016**

23. $0{,}005\cdot(0{,}27-0{,}07)=?$

Yanıt / The answer is **0,001**

24. $\dfrac{5\cdot10^{-5}+0{,}04\cdot10^{-3}+90\cdot10^{-6}}{4{,}5\cdot10^{-6}}=?$

Yanıt / The answer is **40**

1. $\dfrac{\mathbf{0,27 \cdot 10^{-3} + 50 \cdot 10^{-6}}}{\mathbf{0,008}} = \mathbf{?}$

Yanıt / The answer is **0,04**

2. $\dfrac{0,21}{x} = \dfrac{1}{0,2} + \dfrac{1}{0,01} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **0,002**

3. $\dfrac{\mathbf{0,025}}{\mathbf{0,25}} + \dfrac{\mathbf{15}}{\mathbf{0,02}} - \dfrac{\mathbf{1,01}}{\mathbf{0,1}} = \mathbf{?}$

Yanıt / The answer is **740**

4. $\dfrac{\mathbf{10^{-3} + 0,001 - 2 \cdot 10^{-3}}}{\mathbf{10^{-1} + 10^{-2} + 10^{-3}}} = \mathbf{?}$

Yanıt / The answer is **0**

5. $0,5 < x < 1$,

$a = \dfrac{x+2}{x-1}$, $b = \dfrac{x+7}{x+4}$, $c = \dfrac{x+9}{x+6} \Rightarrow \mathbf{? < ? < ?}$

Yanıt / The answer is $\mathbf{a < c < b}$

6. $\dfrac{0,4}{x} = \dfrac{4,\overline{40}}{4,\overline{4}} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is $\mathbf{\dfrac{44}{109}}$

7. $$\frac{2,\overline{2}-3,\overline{3}+4,\overline{4}-5,\overline{5}+6,\overline{6}-7,\overline{7}}{0,\overline{5}+2,\overline{4}}=?$$

Yanıt / The answer is $-\frac{10}{9}$

8. $$\frac{1}{0,1\overline{3}}+\frac{1}{0,2\overline{6}}=?$$

Yanıt / The answer is $\frac{45}{4}$

9. $$\frac{a,0\overline{a}}{0,0\overline{a}}=?$$

Yanıt / The answer is **91**

10. $$\frac{3-0,6666\ldots}{1-0,\overline{7}}=?$$

Yanıt / The answer is $\frac{21}{2}$

11. $$\left.\begin{array}{l}x=0,5454\ldots\\ y=0,3636\ldots\end{array}\right\}\Rightarrow\frac{x+y}{x-y}=?$$

Yanıt / The answer is **5**

12. $$\frac{1,\overline{2}+3,\overline{4}}{2,\overline{1}-1,\overline{2}}=?$$

Yanıt / The answer is $\frac{21}{4}$

13. $\left(2\frac{1}{2}-1\frac{1}{3}\right):\left(1\frac{1}{4}-\frac{5}{6}\right)=?$

Yanıt / The answer is **2,8**

---

14. $2\frac{2}{3}-\frac{2}{5}\cdot\frac{3}{4}=?$

Yanıt / The answer is $\frac{71}{30}$

---

15. $\frac{x}{1-\frac{x}{x+1}}-\frac{1}{1-\frac{x}{x+1}}=?$

Yanıt / The answer is x^2-1

16. $\left(\frac{2x-2}{3}-\frac{3}{4}\right):\frac{1}{6}=0 \Rightarrow x=?$

Yanıt / The answer is $\frac{17}{8}$

---

17. $\left(\frac{1}{2}+\frac{1}{3}-\frac{1}{4}\right)+\left(1-\frac{1}{2}+\frac{1}{4}\right)=?$

Yanıt / The answer is $\frac{4}{3}$

---

18. $\frac{1-\frac{1}{2}}{1+\frac{1}{1+\frac{1}{2}}}=?$

Yanıt / The answer is $\frac{3}{10}$

19. $$1-\frac{1}{1-\frac{1}{1-\frac{1}{x+1}}}=?$$

Yanıt / The answer is **1 + x**

20. $$\frac{\frac{2}{0{,}4}}{0{,}6+\frac{1}{0{,}5+\frac{1}{0{,}5}}}=?$$

Yanıt / The answer is **5**

21. $$1-\frac{0{,}1}{1-\frac{0{,}01}{0{,}02}}=?$$

Yanıt / The answer is **0,8**

22. $$\frac{1{,}32}{0{,}12}+\frac{0{,}3}{0{,}03}-\frac{1{,}8}{0{,}06}=?$$

Yanıt / The answer is **–9**

23. $$\frac{0{,}04}{0{,}008}+\frac{0{,}02}{0{,}004}-\frac{0{,}03}{0{,}005}=?$$

Yanıt / The answer is **4**

24. $$\frac{2}{3+\frac{2}{\frac{0{,}4}{x}}}=\frac{1}{6}\Rightarrow x=?$$

Yanıt / The answer is **2**

1. $$\frac{\left(-2\frac{1}{3}\right) : (0,1\overline{5}) + 3}{(0,\overline{3})^{-1}} = ?$$

Yanıt / The answer is **–4**

---

2. $$\left(2\frac{1}{3} : 0,\overline{3} + 2\right) : \left(4 - 0,\overline{7} : \frac{28}{9}\right) = ?$$

Yanıt / The answer is **2,4**

---

3. $$\frac{0,636363\ldots}{0,1272727\ldots} = ?$$

Yanıt / The answer is **5**

---

4. $$\left.\begin{array}{l} m \neq 0\ ,\ n \neq 0 \\ m + n = 6 \end{array}\right\} \Rightarrow m,\ \overline{nn} + n,\ \overline{mm} = ?$$

Yanıt / The answer is $\mathbf{\frac{20}{3}}$

---

5. $$\frac{1}{9} + 0,\overline{2} - 0,\overline{6} = ?$$

Yanıt / The answer is $\mathbf{-\frac{1}{3}}$

---

6. $$\left(\frac{-1}{\frac{2}{3}}\right)^{-1} : 0,\overline{6} = ?$$

Yanıt / The answer is **–1**

7. $\dfrac{\dfrac{1}{2}+\dfrac{1}{3}}{\left(\dfrac{2}{5}+\dfrac{4}{5}\right)^{-1}}=?$

Yanıt / The answer is **1**

8. $\dfrac{0,\overline{9}}{0,\overline{3}}:\dfrac{0,\overline{6}}{0,\overline{7}}=?$

Yanıt / The answer is $\dfrac{7}{2}$

9. $3-\dfrac{1+\dfrac{1}{2}+\dfrac{1}{3}}{5+\dfrac{5}{2}+\dfrac{5}{3}}=?$

Yanıt / The answer is $\dfrac{14}{5}$

10. $1+\dfrac{1}{-1+\dfrac{2}{-1-\dfrac{2}{\vdots}}}=?$

Yanıt / The answer is **2**

11. $a=\dfrac{117}{115}\ ,\ b=\dfrac{119}{117}\ ,\ c=\dfrac{121}{119}\ \Rightarrow\ ?>?>?$

Yanıt / The answer is **a > b > c**

12. $\dfrac{1+\dfrac{1}{1+\dfrac{1}{2}}}{\dfrac{1}{4}+\dfrac{1}{6}}=?$

Yanıt / The answer is **4**

13. $$\left.\begin{aligned} a &= 5{,}43\overline{2} \\ b &= 5{,}4\overline{32} \\ c &= 5{,}\overline{432} \end{aligned}\right\} \Rightarrow \mathbf{? > ? > ?}$$

Yanıt / The answer is **$c > b > a$**

---

14. $a, k \in Z$

$$\frac{0{,}0016 \cdot 0{,}0032}{0{,}64} = a \cdot 10^{k} \Rightarrow \mathbf{\min(a+k) = ?}$$

Yanıt / The answer is **2**

---

15. $$\frac{\mathbf{0{,}ab + 0{,}ba}}{\mathbf{ab + ba}} = ?$$

Yanıt / The answer is **0,01**

---

16. $$\left(\mathbf{a} - \frac{\mathbf{1}}{\mathbf{a}}\right) \cdot \left(\mathbf{a} + \frac{\mathbf{1}}{\mathbf{a+1}}\right) : \frac{\mathbf{a^{3} - 1}}{\mathbf{a}} = \mathbf{?}$$

Yanıt / The answer is **1**

---

17. $$\left(a - \frac{1}{2}\right) + \left(a - \frac{1}{3}\right) = \frac{7}{6} \Rightarrow \mathbf{a = ?}$$

Yanıt / The answer is **1**

---

18. $$\left(\frac{a}{a+1}\right) \cdot \left(\frac{a+1}{a+2}\right) \cdot \ldots \cdot \left(\frac{a+9}{a+10}\right) = 3 \Rightarrow \mathbf{a = ?}$$

Yanıt / The answer is **–15**

19. $\left.\begin{array}{l} a = 4{,}567 \\ b = 4{,}367 \\ c = 4{,}566 \end{array}\right\} \Rightarrow \mathbf{?} > \mathbf{?} > \mathbf{?}$

Yanıt / The answer is **a > c > b**

---

20. $\dfrac{a,\bar{b} - b,\bar{a}}{16} = \dfrac{1}{18} \Rightarrow \mathbf{a - b = ?}$

Yanıt / The answer is **1**

---

21. $\dfrac{\dfrac{1}{2} - \dfrac{1}{3} : \dfrac{1}{5}}{1 - \left(\dfrac{1}{2} + \dfrac{2}{3}\right)} = ?$

Yanıt / The answer is **7**

---

22. $3 + \dfrac{1}{1 - \dfrac{3}{5}} = ?$

Yanıt / The answer is $\mathbf{\dfrac{11}{2}}$

---

23. $2 - \dfrac{1}{1 - \dfrac{1}{1 + \dfrac{1}{3}}} \cdot \dfrac{1}{2} = ?$

Yanıt / The answer is **0**

---

24. $\dfrac{\dfrac{\dfrac{a}{3} + 3}{3} + 3}{3} + 3 = 6 \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **45**

1. $\left(\dfrac{-1}{\frac{2}{3}}\right)^{-2} \cdot \left(\dfrac{\frac{2}{3}}{2}\right)^{-3} = ?$

Yanıt / The answer is **12**

2. $\dfrac{2+\frac{1}{2}}{2} - \dfrac{2}{2+\frac{1}{2}} = ?$

Yanıt / The answer is $\dfrac{9}{20}$

3. $\dfrac{x}{\frac{2}{3}} - \dfrac{\frac{x}{2}}{3} = 2 \Rightarrow x = ?$

Yanıt / The answer is $\dfrac{3}{2}$

4. $x = 3 + \dfrac{4}{3+\frac{4}{\vdots}} \quad , \quad y = 8 + \dfrac{9}{8+\frac{9}{\vdots}} \Rightarrow y - x = ?$

Yanıt / The answer is **5**

5. $a, b \in \mathbb{N}^+$,

$\dfrac{a}{0,2} + \dfrac{a}{0,3} + \dfrac{a}{0,4} = b \Rightarrow \min(a+b) = ?$

Yanıt / The answer is **71**

6. $0,\overline{x} + 0,\overline{xy} = \dfrac{109}{99} \Rightarrow x + y = ?$

Yanıt / The answer is **9**

yos lovers

7. $x, y, z \in Z^+$

$$\frac{x+y}{y} = 2,4 \quad , \quad \frac{y-z}{z} = 0,6 \;\Rightarrow\; \mathbf{? > ? > ?}$$

Yanıt / The answer is **x > y > z**

8. $$\frac{0,\overline{27} - 0,\overline{9}}{2 - \frac{4}{11} : 2} = ?$$

Yanıt / The answer is $-\frac{2}{5}$

9. $$\frac{1 - \frac{1}{\frac{1}{3}}}{1 - \frac{1}{1 + \frac{1}{1,\overline{9}}}} = ?$$

Yanıt / The answer is **–6**

10. $x, A \in Z^+$,

$$A = x : \left(\frac{1}{4} + \frac{2}{3} + \frac{5}{36}\right) \;\Rightarrow\; \mathbf{\min(x) = ?}$$

Yanıt / The answer is **19**

11. $$\frac{1}{1 - \frac{1}{1 + \frac{x-1}{8}}} = 6 \;\Rightarrow\; \mathbf{x = ?}$$

Yanıt / The answer is $\frac{13}{5}$

12. $$\left.\begin{array}{l} x = 0,m\overline{2} \\ y = 0,2\overline{m} \\ x + y = \frac{2}{3} \end{array}\right\} \Rightarrow \mathbf{m = ?}$$

Yanıt / The answer is **4**

13. $2-\dfrac{\frac{1}{2}+\frac{1}{3}}{\frac{5}{2}+\frac{5}{3}}=?$

Yanıt / The answer is $\dfrac{9}{5}$

---

14. $\left(\dfrac{2}{3}+\dfrac{3}{5}\right):\left(\dfrac{4}{9}-\dfrac{2}{15}\right)=?$

Yanıt / The answer is $\dfrac{57}{14}$

---

15. $2+\cfrac{3}{2+\cfrac{3}{2+\cfrac{3}{2}}}=?$

Yanıt / The answer is $\dfrac{61}{20}$

---

16. $\dfrac{2^{-1}+\left(\frac{1}{2}\right)^{-1}}{\left(2+\frac{1}{2}\right)^{-1}}=?$

Yanıt / The answer is $\dfrac{25}{4}$

---

17. $4-\cfrac{1}{2-\cfrac{1}{2-\cfrac{1}{\vdots}}}=?$

Yanıt / The answer is **3**

---

18. $5+\cfrac{x}{5+\cfrac{x}{5+\cfrac{x}{5+\cfrac{x}{\vdots}}}}=9 \;\Rightarrow\; x=?$

Yanıt / The answer is **36**

19. $$\frac{\frac{3}{2}+\left(\frac{2}{9}\right)^{-1}}{\left(0,\overline{3}+0,\overline{1}\right)^{-2}}=?$$

Yanıt / The answer is $\frac{32}{27}$

20. $0,\overline{1a}=0,\overline{b2cd} \Rightarrow \mathbf{a+b+c+d=?}$

Yanıt / The answer is **6**

21. $$\left.\begin{aligned} x &= 0,\overline{325} \\ y &= 0,\overline{3253} \\ z &= 0,\overline{32532} \end{aligned}\right\} \Rightarrow \mathbf{?<?<?}$$

Yanıt / The answer is $\mathbf{z<x<y}$

22. $a=-\frac{73}{75},\quad b=-\frac{75}{77},\quad c=-\frac{77}{99}$

$\Rightarrow \mathbf{?<?<?}$

Yanıt / The answer is $\mathbf{c<b<a}$

23. $$\frac{0,4}{0,004}+\frac{0,03}{0,3}+\frac{(0,2)^{-1}}{0,2}=?$$

Yanıt / The answer is **125,1**

24. $$\frac{(0,72)^2-(0,36)^2}{(0,38)^2-(0,02)^2}=?$$

Yanıt / The answer is **2,7**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $\frac{2}{3}+\frac{4}{5}+\frac{1}{2}=?$

A) $\frac{59}{30}$ B) 2 C) $\frac{61}{30}$ D) $\frac{31}{15}$ E) $\frac{21}{10}$

2. $\frac{1}{8}+\frac{1}{5}+\frac{1}{2}=?$

A) $\frac{31}{40}$ B) $\frac{4}{5}$ C) $\frac{33}{40}$ D) $\frac{17}{20}$ E) $\frac{7}{8}$

3. $\frac{3}{10}-\frac{2}{10}:\frac{1}{5}=?$

A) $-\frac{3}{5}$ B) $-\frac{7}{10}$ C) 1 D) $\frac{3}{5}$ E) $\frac{10}{7}$

4. $\left(\frac{1}{4}-4\right)\cdot\left(1-\frac{11}{15}\right)=?$

A) $-\frac{3}{4}$ B) -1 C) $\frac{1}{2}$ D) $\frac{3}{4}$ E) 1

5. $\left(8-\frac{3}{5}\right)-\left(\frac{2}{5}+8\right)=?$

A) $-\frac{1}{5}$ B) $-\frac{3}{5}$ C) -1 D) 16 E) $\frac{82}{5}$

6. $2-\frac{1}{2}:\frac{1-\frac{1}{4}}{1+\frac{1}{4}}=?$

A) $\frac{1}{6}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{5}{6}$ E) $\frac{7}{6}$

7. $\left[\frac{\frac{1}{8}}{\frac{1}{4}}:\frac{3}{\frac{1}{3}}\right]^{-1}=?$

A) $\frac{1}{18}$ B) $\frac{1}{9}$ C) 1 D) 9 E) 18

8. $\frac{\frac{2}{3}}{8}+\frac{3}{\frac{12}{13}}=?$

A) $\frac{8}{3}$ B) 3 C) $\frac{10}{3}$ D) $\frac{11}{3}$ E) 4

9. $\dfrac{\left(\dfrac{3}{1001}-\dfrac{5}{1003}\right)-\left(\dfrac{5}{1003}+\dfrac{3}{1001}\right)}{\dfrac{5}{1003}}=?$

A) -2 B) $-\dfrac{5}{1003}$ C) 0

D) $\dfrac{1003}{5}$ E) $\dfrac{10}{1003}$

10. $2-\dfrac{4-\dfrac{1}{3}+1}{3-\dfrac{1}{4}+1}=?$

A) $\dfrac{34}{45}$ B) $\dfrac{7}{9}$ C) $\dfrac{4}{5}$ D) $\dfrac{37}{45}$ E) $\dfrac{38}{45}$

11. $3-\dfrac{1+\dfrac{1}{1+\dfrac{1}{2}}}{\dfrac{3}{5}}=?$

A) $\dfrac{1}{9}$ B) $\dfrac{2}{9}$ C) $\dfrac{1}{3}$ D) $\dfrac{4}{9}$ E) $\dfrac{5}{9}$

12. $1+\dfrac{1-\dfrac{2}{5}}{1+\dfrac{2}{5}}=?$

A) $\dfrac{6}{7}$ B) 1 C) $\dfrac{8}{7}$ D) $\dfrac{9}{7}$ E) $\dfrac{10}{7}$

13. $\dfrac{1}{2}\cdot\dfrac{2}{3}\cdot\dfrac{3}{4}\cdot\ldots\cdot\dfrac{16}{17}=?$

A) $\dfrac{1}{2}$ B) $\dfrac{1}{6}$ C) $\dfrac{1}{12}$ D) $\dfrac{1}{15}$ E) $\dfrac{1}{17}$

14. $\left(1-\dfrac{1}{2}\right)\cdot\left(1-\dfrac{1}{3}\right)\cdot\ldots\ldots\cdot\left(1-\dfrac{1}{16}\right)=A \Rightarrow \mathbf{8\cdot A=?}$

A) $\dfrac{1}{2}$ B) $\dfrac{1}{3}$ C) $\dfrac{1}{4}$ D) $\dfrac{1}{5}$ E) $\dfrac{1}{6}$

15. $\left(1-\dfrac{1}{2}\right)+\left(2-\dfrac{1}{2}\right)+\ldots\ldots+\left(10-\dfrac{1}{2}\right)=?$

A) 40 B) 45 C) 50 D) 55 E) 60

16. $\dfrac{1}{2}+\dfrac{2}{3}+\dfrac{3}{2}+\dfrac{4}{3}+\ldots+\dfrac{11}{2}+\dfrac{12}{3}=?$

A) 28 B) 29 C) 30 D) 31 E) 32

Yanıtlar / Answers

1. A	**4. B**	**7. E**	**10. A**	**13. E**	**16. E**
2. C	**5. C**	**8. C**	**11. B**	**14. A**	
3. B	**6. E**	**9. A**	**12. E**	**15. C**	

1. $2\frac{1}{2}-1\frac{1}{3}=?$

A) $\frac{7}{6}$ B) 1 C) $\frac{5}{6}$ D) $\frac{2}{3}$ E) $\frac{1}{2}$

2. $\left(1-\frac{1}{5}\right)\cdot\left(1-\frac{1}{6}\right)\cdot\left(1-\frac{1}{7}\right)\cdot\ldots\ldots\cdot\left(1-\frac{1}{21}\right)=?$

A) 4 B) $\frac{21}{5}$ C) $\frac{22}{5}$ D) $\frac{23}{5}$ E) 5

3. $\frac{1}{6}+\frac{3}{6}+\ldots\ldots+\frac{13}{6}=A$

$\frac{2}{6}+\frac{4}{6}+\ldots\ldots+\frac{14}{6}=B$

$\Rightarrow B-A=?$

A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{5}{6}$ D) 1 E) $\frac{7}{6}$

4. $1\frac{1}{3}-\frac{1-\frac{3}{5}}{2-\frac{1}{5}}=?$

A) $\frac{10}{9}$ B) 1 C) $\frac{8}{9}$ D) $\frac{7}{9}$ E) $\frac{2}{3}$

5. $\frac{\left(\frac{1}{2}-\frac{1}{4}\right):4^{-1}}{\left(\frac{1}{3}-\frac{1}{6}\right):6^{-1}}=?$

A) $\frac{1}{2}$ B) $\frac{1}{6}$ C) 1 D) 2 E) 3

6. $\frac{3}{4}+\frac{1}{5}+\frac{4}{7}=A$

$\Rightarrow \frac{1}{4}+\frac{4}{5}+\frac{3}{7}=?$

A) 1 – A B) 2 – A C) 3 – A D) A E) A – 3

7. $\frac{4}{9}+\frac{3}{7}+\frac{8}{11}=A$

$\Rightarrow \frac{13}{9}-\frac{4}{7}-\frac{3}{11}=?$

A) 1 – A B) 2 – A C) A D) A – 1 E) A – 2

8. $\frac{1}{3}+\frac{1}{5}+\frac{1}{7}=x$

$\Rightarrow \frac{1}{3}+\frac{3}{5}+\frac{5}{7}=?$

A) 3 – x B) 1 – x C) 3 – 2x D) 1 – 2x E) –x + 1

9. $2+\cfrac{3}{2+\cfrac{3}{\vdots}}=?$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $4+\cfrac{5}{4+\cfrac{5}{\vdots}}=x$, $3+\cfrac{4}{3+\cfrac{4}{\vdots}}=y \Rightarrow x+y=?$

A) 4 B) 5 C) 7 D) 9 E) 11

11. $5+\cfrac{6}{1+\cfrac{6}{1+\cfrac{6}{\vdots}}}=?$

A) 6 B) 7 C) 8 D) 9 E) 10

12. $\frac{3}{4}=x$, $\frac{2}{5}=y$, $\frac{1}{10}=z \Rightarrow ?>?>?$

A) x > y > z B) x > z > y C) z > x > y
D) y > x > z E) y > z > x

13. $\left.\begin{array}{l} a=\frac{2}{7} \\ b=\frac{3}{8} \\ c=\frac{6}{11} \end{array}\right\} = ?>?>?$

A) a > b > c B) a > c > b C) c > a > b
D) c > b > a E) b > a > c

14. $x=\frac{1001}{1000}$, $y=\frac{1003}{1002}$, $z=\frac{1004}{1003} \Rightarrow ?>?>?$

A) x > y > z B) x > z > y C) z > x > y
D) y > x > z E) y > z > x

15. $a=-\frac{7}{6}$, $b=-\frac{11}{10}$, $c=-\frac{15}{4} \Rightarrow ?>?>?$

A) a > b > c B) a > c > b C) c > b > a
D) c > a > b E) b > a > c

16. $x \in Z$,

$\frac{20}{x} \in Z \Rightarrow \sum x=?$

A) 0 B) 2 C) 11 D) 20 E) 31

Yanıtlar / Answers

1. A	4. A	7. D	10. D	13. D	16. A
2. C	5. C	8. C	11. B	14. A	
3. E	6. C	9. C	12. A	15. E	

1. $1+\frac{1}{3}+\frac{1}{6}+\frac{1}{9}=?$

A) $\frac{17}{18}$ B) $\frac{19}{18}$ C) $\frac{23}{18}$ D) $\frac{29}{18}$ E) $\frac{31}{18}$

2. $\left(3+\frac{1}{3}\right)-\left(3-\frac{1}{3}\right)=?$

A) $-\frac{1}{3}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) 1 E) $\frac{4}{3}$

3. $\frac{3}{2}-\left(\frac{4}{3}+\frac{3}{2}\right)+\left(\frac{3}{10}+\frac{4}{3}-\frac{1}{2}\right)=?$

A) -1 B) $-\frac{4}{5}$ C) $-\frac{3}{5}$ D) $-\frac{2}{5}$ E) $-\frac{1}{5}$

4. $\left(1-\frac{1}{2}\right)\cdot\left(1-\frac{1}{3}\right)\cdots\left(1-\frac{1}{15}\right)=?$

A) 1 B) $\frac{1}{3}$ C) $\frac{1}{5}$ D) $\frac{1}{15}$ E) $\frac{1}{30}$

5. $\dfrac{\left(2-\frac{1}{2}\right)+\left(3+\frac{1}{3}\right)}{\left(4-\frac{1}{4}\right)+\left(4+\frac{1}{4}\right)}=?$

A) $\frac{29}{48}$ B) $\frac{31}{48}$ C) $\frac{17}{24}$ D) $\frac{35}{48}$ E) $\frac{13}{16}$

6. $1-\dfrac{1}{1+\dfrac{1}{1+\frac{1}{3}}}=?$

A) 1 B) $\frac{6}{7}$ C) $\frac{5}{7}$ D) $\frac{4}{7}$ E) $\frac{3}{7}$

7. $1+\dfrac{1+\frac{1}{3}}{1-\frac{1}{3}}=?$

A) 1 B) 2 C) 3 D) 4 E) 6

8. $\dfrac{1+\dfrac{1}{1+\frac{1}{4}}}{1-\dfrac{1}{4-\frac{1}{2}}}=?$

A) $\frac{18}{25}$ B) $\frac{27}{25}$ C) $\frac{9}{5}$ D) $\frac{54}{25}$ E) $\frac{63}{25}$

9. $\dfrac{3-\dfrac{1+\dfrac{1}{3}}{2}}{2+\dfrac{3+\dfrac{1}{3}}{3}}-1=?$

A) $-\dfrac{1}{8}$ B) $\dfrac{1}{8}$ C) $\dfrac{1}{4}$ D) $-\dfrac{1}{4}$ E) 1

10. $1+\dfrac{1-\dfrac{2-\dfrac{1}{4}}{\dfrac{1}{4}}}{\dfrac{1}{4}}=?$

A) 41 B) 39 C) 35 D) 33 E) 29

11. $2+\dfrac{1-\dfrac{1}{1-\dfrac{1}{2}}}{1-\dfrac{1}{1+\dfrac{2}{3}}}=?$

A) $\dfrac{3}{2}$ B) $\dfrac{2}{3}$ C) $-\dfrac{1}{3}$ D) $-\dfrac{1}{2}$ E) $-\dfrac{1}{6}$

12. $3-\dfrac{1}{2-\dfrac{1}{1-\dfrac{1}{3}}}=?$

A) 2 B) $\dfrac{4}{3}$ C) 1 D) $\dfrac{2}{3}$ E) $\dfrac{1}{2}$

13. $2+\dfrac{\dfrac{1}{3}-\dfrac{1}{6}+\dfrac{1}{9}}{\dfrac{1}{3}+\dfrac{1}{6}-\dfrac{4}{9}}=?$

A) 8 B) 7 C) 6 D) 4 E) 3

14. $\dfrac{3\dfrac{1}{2}}{4\dfrac{1}{5}}+\dfrac{7}{6}=?$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $\dfrac{1}{19}:\dfrac{1-\dfrac{1}{4}}{3\dfrac{1}{4}-\dfrac{5}{3}}=?$

A) $\dfrac{1}{9}$ B) $\dfrac{2}{9}$ C) $\dfrac{1}{3}$ D) $\dfrac{4}{9}$ E) $\dfrac{5}{9}$

16. $\dfrac{4-3\dfrac{1}{2}}{2-\dfrac{1}{3-\dfrac{1}{1-\dfrac{1}{4}}}}=?$

A) $\dfrac{3}{14}$ B) $\dfrac{2}{7}$ C) $\dfrac{5}{14}$ D) $\dfrac{3}{7}$ E) $\dfrac{1}{2}$

Yanıtlar / Answers

1. D	4. D	7. C	10. A	13. B	16. C
2. C	5. A	8. E	11. D	14. B	
3. E	6. E	9. D	12. C	15. A	

1. $\frac{1}{2}+\frac{1}{3}+\frac{1}{4}=?$

A) $\frac{11}{12}$ B) 1 C) $\frac{13}{12}$ D) $\frac{7}{6}$ E) $\frac{5}{4}$

2. $\frac{1}{6}-\frac{1}{5}+\frac{1}{10}=?$

A) $\frac{1}{15}$ B) $\frac{2}{15}$ C) $\frac{1}{5}$ D) $\frac{4}{15}$ E) $\frac{1}{3}$

3. $\left(\frac{4}{7}:\frac{3}{14}\right)\cdot\frac{3}{4}=?$

A) 1 B) 2 C) 3 D) 4 E) 5

4. $\left(4+\frac{2}{5}\right)-\left(4-\frac{3}{5}\right)=?$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $1-\frac{1}{2}:\frac{1+\frac{1}{3}}{1-\frac{1}{3}}=?$

A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) 1 D) $\frac{5}{4}$ E) $\frac{4}{5}$

6. $\left(\frac{3}{8}-\frac{4}{5}+\frac{9}{10}\right)-\left(\frac{3}{8}+\frac{1}{5}-\frac{1}{10}\right)=?$

A) 0 B) $\frac{1}{10}$ C) $\frac{1}{5}$ D) $\frac{1}{2}$ E) 1

7. $\dfrac{\left(3-\frac{2}{3}\right)+\left(2-\frac{1}{3}\right)}{\left(2+\frac{2}{5}\right)-\left(\frac{7}{5}-3\right)}=?$

A) 0 B) 1 C) $\frac{3}{5}$ D) $\frac{5}{3}$ E) $\frac{1}{7}$

8. $\dfrac{1+\dfrac{1}{2+\frac{1}{2}}}{\frac{1}{5}}=?$

A) $\frac{1}{10}$ B) $\frac{1}{5}$ C) 2 D) 7 E) $\frac{5}{2}$

9. $1+\dfrac{2-\dfrac{2}{5}}{2+\dfrac{2}{5}}=?$

A) 1 B) $\frac{3}{5}$ C) $\frac{2}{5}$ D) $\frac{5}{3}$ E) $\frac{5}{2}$

10. $2-\dfrac{3-\dfrac{7}{11}}{\dfrac{7}{11}-3}=?$

A) 1 B) 7 C) 11 D) $\frac{15}{11}$ E) 3

11. $3-\dfrac{1}{1+\dfrac{3}{1-\dfrac{1}{2}}}=?$

A) $\frac{20}{7}$ B) $\frac{1}{6}$ C) $\frac{1}{4}$ D) $\frac{1}{3}$ E) $\frac{1}{2}$

12. $\dfrac{\left(\dfrac{1}{2}-\dfrac{1}{3}\right):\dfrac{1}{6}}{\left(\dfrac{1}{3}-\dfrac{1}{4}\right):\dfrac{5}{12}}=?$

A) 1 B) $\frac{1}{12}$ C) 5 D) $\frac{5}{12}$ E) $\frac{1}{6}$

13. $\dfrac{\left(1-\dfrac{1}{2}\right)\cdot\left(1-\dfrac{1}{3}\right)\cdots\left(1-\dfrac{1}{10}\right)}{\left(1-\dfrac{1}{10}\right)\cdot\left(1-\dfrac{1}{11}\right)\cdot\left(1-\dfrac{1}{12}\right)\cdots\left(1-\dfrac{1}{20}\right)}=?$

A) 2 B) $\frac{2}{9}$ C) $\frac{1}{9}$ D) $\frac{1}{10}$ E) $\frac{1}{20}$

14. $2-\dfrac{\dfrac{2}{3}-\dfrac{2}{5}+\dfrac{2}{7}}{\dfrac{1}{3}-\dfrac{1}{5}+\dfrac{1}{7}}=?$

A) 0 B) $\frac{1}{2}$ C) 1 D) $\frac{3}{2}$ E) 2

15. $1-\dfrac{3+\dfrac{1}{3+\dfrac{1}{3}}}{2+\dfrac{1}{2+\dfrac{1}{2}}}=?$

A) $-\frac{3}{8}$ B) $-\frac{3}{4}$ C) 0 D) $\frac{1}{4}$ E) $\frac{1}{3}$

16. $5+\dfrac{1-\dfrac{1}{2-\dfrac{1}{2}}}{1-\dfrac{1}{\dfrac{3}{2}}}=?$

A) $\frac{11}{5}$ B) $\frac{9}{2}$ C) $\frac{16}{3}$ D) 6 E) 7

Yanıtlar / Answers

1. C	4. A	7. B	10. E	13. B	16. D
2. A	5. B	8. D	11. A	14. A	
3. B	6. A	9. D	12. C	15. A	

$\frac{1}{4}+\frac{1}{3}:\frac{4}{5}-\frac{1}{2}=?$

A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) $\frac{1}{2}$ D) $\frac{1}{6}$ E) $\frac{1}{12}$

2. $1-\frac{2}{\frac{3}{4}}:\frac{\frac{2}{3}}{4}=?$

A) –6 B) –9 C) –12 D) –15 E) –18

3. $\frac{1}{3}-\frac{1}{3}:\frac{1}{3}+\frac{1}{3}\cdot\frac{1}{3}=?$

A) $-\frac{10}{9}$ B) $-\frac{11}{9}$ C) $-\frac{5}{9}$ D) $-\frac{13}{9}$ E) $-\frac{14}{9}$

4. $\left(2\frac{2}{9}:\frac{5}{3}\right)+\frac{1}{3}:\frac{4}{3}-\frac{1}{3}=?$

A) $\frac{3}{4}$ B) 1 C) $\frac{5}{4}$ D) $\frac{3}{2}$ E) $\frac{7}{4}$

5. $2-\dfrac{\frac{1}{3}:\frac{3}{4}}{\frac{1}{4}:\frac{4}{3}}=?$

A) $-\frac{10}{3}$ B) $-\frac{5}{3}$ C) $-\frac{10}{9}$ D) $-\frac{5}{9}$ E) $-\frac{10}{27}$

6. $\dfrac{\left(2011-\frac{1}{4}\right)-\left(2012-\frac{3}{4}\right)}{\left(\frac{3}{4}-2012\right)+\left(2012-\frac{1}{4}\right)}=?$

A) –1 B) –2 C) –3 D) –4 E) –5

7. $\left(1\frac{1}{2}\right)\cdot\left(1\frac{1}{3}\right)\cdot\left(1\frac{1}{4}\right)\ldots\left(1\frac{1}{a}\right)=48$

$\Rightarrow$ **a = ?**

A) 90 B) 92 C) 95 D) 97 E) 100

8. $A=\left(\frac{1}{3}-1\right)\cdot\left(\frac{1}{4}-1\right)\ldots\left(\frac{1}{10}-1\right)$

$B=\left(1+\frac{1}{2}\right)\cdot\left(1+\frac{1}{3}\right)\ldots\left(1+\frac{1}{15}\right)$

$\Rightarrow \frac{B}{A}=?$

A) –50 B) –40 C) –20 D) 20 E) 40

9. $\frac{1}{x}-\left(\frac{1}{x}-\frac{1}{y}\right)-\left(\frac{1}{x}+\frac{1}{y}-\frac{1}{2x}\right)=?$

A) $\frac{-1}{2x}$ B) $\frac{-x}{y}$ C) $\frac{3}{2x}$ D) $\frac{-3}{2x}$ E) $\frac{1}{2x}$

10. $\frac{\frac{2}{3}}{4}=k\cdot\frac{2}{\frac{3}{4}} \Rightarrow k=?$

A) $\frac{1}{4}$ B) $\frac{1}{8}$ C) $\frac{1}{16}$ D) $\frac{1}{20}$ E) $\frac{1}{24}$

11. $3+\frac{\frac{x-\frac{1}{x}}{1+\frac{1}{x}}}{3x-3}=?$

A) $x+1$ B) $\frac{x}{x-1}$ C) $\frac{x+1}{3}$ D) $\frac{10}{3}$ E) 3

12. $1-\frac{1}{1-\frac{1}{x+1}}=?$

A) $-\frac{1}{x}$ B) $-x$ C) x D) 1 E) $\frac{1}{x}$

13. $a+\frac{1+\frac{1-\frac{1}{a}}{\frac{a-1}{a}}}{\frac{1}{a}}=?$

A) $\frac{a}{4}$ B) $\frac{a}{2}$ C) $2a$ D) $3a$ E) $6a$

14. $2-\frac{2+\frac{1+\frac{1}{2}}{\frac{3}{4}}}{1+\frac{1}{x+1}}=?$

A) $\frac{-2x}{x+2}$ B) $\frac{-x}{x+2}$ C) $\frac{x}{x+2}$ D) 1 E) $\frac{x+4}{x+2}$

15. $1-\frac{\frac{a+\frac{1}{a}}{a}}{1+\frac{1}{a^2}}=?$

A) $\frac{2a^2}{a^2+1}$ B) $\frac{a^2}{a^2+1}$ C) 0 D) -1 E) $\frac{a^2}{a^2+2}$

16. $x+\frac{1+\frac{1}{x}}{\frac{1}{x}}=?$

A) $1+3x$ B) $3x$ C) $1+2x$ D) $2x$ E) $4x$

Yanıtlar / Answers

1. D	**4. C**	**7. C**	**10. C**	**13. D**	**16. C**
2. D	**5. E**	**8. B**	**11. D**	**14. A**	
3. C	**6. E**	**9. A**	**12. A**	**15. C**	

1. $\left(1-\frac{1}{2}\right)\cdot\left(1-\frac{1}{3}\right)\cdot\left(1-\frac{1}{4}\right)\dots\left(1-\frac{1}{18}\right)=?$

A) $\frac{1}{19}$ B) $\frac{1}{18}$ C) $\frac{1}{9}$ D) $\frac{19}{2}$ E) 19

2. $\underbrace{\frac{1}{2}-\frac{1}{3}+\frac{1}{2}-\frac{1}{3}+\dots+\frac{1}{2}-\frac{1}{3}}_{\text{20 Terim / Terms}}=?$

A) $\frac{5}{3}$ B) $\frac{3}{5}$ C) $\frac{2}{5}$ D) $\frac{5}{2}$ E) 1

3. $1+\cfrac{2}{1+\cfrac{2}{1+\cfrac{2}{\vdots}}}=?$

A) 1 B) 2 C) 3 D) 4 E) 5

4. $3+\cfrac{2}{1+\cfrac{2}{1+\cfrac{2}{\vdots}}}=?$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $A=1+\cfrac{30}{1+\cfrac{30}{1+\cfrac{30}{\vdots}}}$ $B=4-\cfrac{4}{4-\cfrac{4}{\vdots}}$

A – B = ?

A) 1 B) 2 C) 3 D) 4 E) 5

6. $\frac{6}{7}-\frac{5}{6}+\frac{7}{8}=A \Rightarrow \frac{1}{7}-\frac{1}{6}+\frac{1}{8}=?$

A) 1 – A B) 2A – 1 C) 3 – A
D) 4 + A E) 5 – 2A

7. $\frac{2}{5}+\frac{3}{7}-\frac{1}{3}=x \Rightarrow \frac{1}{5}+\frac{1}{7}-\frac{1}{3}=?$

A) 1 – x B) 1 + x C) 1 – 2x
D) 2x + 1 E) 2x – 1

8. $A=\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\dots+\frac{1}{10}$

$B=\frac{3}{2}+\frac{5}{3}+\frac{7}{4}+\dots+\frac{19}{10}$

⇒ **A + B = ?**

A) 10 B) 12 C) 14 D) 16 E) 18

9. $\left(\dfrac{103+\dfrac{9}{4}}{105+\dfrac{1}{4}}\right)\cdot\left(\dfrac{99+\dfrac{5}{2}}{101+\dfrac{1}{2}}\right)=?$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $a=\dfrac{5}{6},\ b=\dfrac{1}{3},\ c=\dfrac{3}{4}$

$\Rightarrow$ **? > ? > ?**

A) a > c > b B) a > b > c C) c > b > a
D) c > a > b E) b > a > c

11. $a=\dfrac{2}{11},\ b=\dfrac{3}{20},\ c=\dfrac{4}{21}$

$\Rightarrow$ **? > ? > ?**

A) c > b > a B) c > a > b C) b > a > c
D) b > c > a E) a > b > c

12. $a=\dfrac{105}{103},\ b=\dfrac{101}{99},\ c=\dfrac{109}{107}$

$\Rightarrow$ **? > ? > ?**

A) b > a > c B) c > b > a C) b > c > a
D) c > a > b E) a > b > c

13. $a, b, c, d \in Z^+$,

$$\frac{57}{10}=a+\cfrac{1}{b+\cfrac{1}{c+\cfrac{1}{d}}} \Rightarrow \mathbf{a+b+c+d=?}$$

A) 10 B) 11 C) 12 D) 13 E) 14

14. $a, b, c \in Z^+$,

$$\frac{27}{11}=a+\cfrac{1}{b+\cfrac{1}{c}} \Rightarrow \mathbf{a+b+c=?}$$

A) 7 B) 8 C) 9 D) 10 E) 11

15. $x \in Z$,

$$\frac{14}{x}\in Z \Rightarrow \sum \mathbf{x=?}$$

A) 0 B) 2 C) 7 D) 9 E) 24

16. $A=\dfrac{8}{11}-\dfrac{7}{10}+\dfrac{13}{27} \Rightarrow \mathbf{\dfrac{3}{11}-\dfrac{3}{10}+\dfrac{14}{27}}=?$

A) 1 + A B) A – 1 C) 1 – A
D) A E) –A – 1

Yanıtlar / Answers

1. D	**4. D**	**7. C**	**10. A**	**13. B**	**16. C**
2. A	**5. D**	**8. E**	**11. B**	**14. C**	
3. B	**6. A**	**9. A**	**12. A**	**15. A**	

1. $\underbrace{\frac{1}{3}-\frac{1}{4}+\frac{1}{3}-\frac{1}{4}+\ldots-\frac{1}{4}+\frac{1}{3}}_{\text{23 terim / terms}}=?$

A) $\frac{7}{5}$ B) $\frac{5}{4}$ C) $\frac{12}{11}$ D) $\frac{13}{6}$ E) $\frac{1}{12}$

2. $2-\cfrac{1}{1+\cfrac{3}{1-\cfrac{1}{a}}}=\frac{1}{2} \Rightarrow a=?$

A) $\frac{1}{10}$ B) $\frac{7}{10}$ C) $\frac{9}{10}$ D) $\frac{11}{10}$ E) $\frac{13}{10}$

3. $a \neq b$,

$2a=5b \Rightarrow \left(\frac{a}{b}+1\right)\cdot\left(\frac{a}{a-b}\right)=?$

A) $\frac{3}{2}$ B) $\frac{10}{3}$ C) $\frac{25}{6}$ D) 5 E) $\frac{35}{6}$

4. $x \neq 0,\ y \neq 0,\ x \neq y$,

$\cfrac{\frac{x}{y}}{\frac{x}{y}-1}+\frac{y}{y-x}=?$

A) 1 B) $\frac{1}{x}$ C) $\frac{y}{x}$ D) $\frac{x}{y}$ E) 0

5. $3-\cfrac{3-\cfrac{\iddots}{2}}{2}=?$

A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{2}$ D) 2 E) 3

6. $3+\cfrac{3+\cfrac{\vdots}{3}}{3}=?$

A) 2 B) $\frac{5}{2}$ C) 4 D) $\frac{9}{2}$ E) 5

7. $\cfrac{1+\cfrac{1+\cfrac{\vdots}{5}}{5}}{3+\cfrac{4}{3+\cfrac{4}{\vdots}}}=?$

A) $\frac{5}{2}$ B) 1 C) $\frac{5}{4}$ D) $\frac{5}{16}$ E) $\frac{5}{32}$

8. $2x+\cfrac{12}{2x+\cfrac{12}{2x+\cfrac{12}{\vdots}}}=4 \Rightarrow 4x=?$

A) 1 B) 2 C) 3 D) 4 E) 5

9. $x = 1 + \cfrac{2}{1 + \cfrac{2}{\vdots}} \Rightarrow \mathbf{x = ?}$

A) –1 B) 0 C) 1 D) 2 E) 3

10. $x = 1 + \cfrac{12}{1 + \cfrac{12}{1 + \cfrac{12}{\vdots}}}$, $y = 6 - \cfrac{9}{6 - \cfrac{9}{\vdots}}$

$\Rightarrow \mathbf{x + y = ?}$

A) 1 B) 2 C) 4 D) 6 E) 7

11. $\frac{3}{5} + \frac{4}{7} + \frac{5}{9} = x$

$\Rightarrow \mathbf{\frac{2}{5} + \frac{3}{7} + \frac{4}{9} = ?}$

A) x – 1 B) 2x C) $\frac{x}{3}$

D) 3 – x E) x – 3

12. $\frac{5}{8} - \frac{2}{7} + \frac{1}{6} - \frac{4}{5} = x$

$\Rightarrow \mathbf{\frac{3}{8} - \frac{5}{7} - \frac{1}{6} - \frac{1}{5} = ?}$

A) –x B) 1 – x C) x – 1

D) –1 – x E) 1 + x

13. $\frac{a}{b} + \frac{b}{c} + \frac{c}{d} = x$

$\mathbf{\frac{a-b}{b} + \frac{b+c}{c} + \frac{c+d}{d} = ?}$

A) x + 3 B) x + 1 C) x

D) 2x + 1 E) 2x

14. $x \in \mathbb{Z}$,

$\frac{6}{x+1} \in \mathbb{Z} \Rightarrow \mathbf{\sum x = ?}$

A) –10 B) –8 C) –4 D) 0 E) 2

15. $x = \frac{2}{5}$, $y = \frac{3}{7}$, $z = \frac{4}{11}$

$\Rightarrow$ **? < ? < ?**

A) x < y < z B) y < x < z C) z < x < y

D) z < y < x E) x < z < y

16. $a = \frac{13}{11}$ $b = \frac{133}{131}$ $c = \frac{1333}{1331}$ **sayılarının küçükten büyüğe sıralanışı hangisidir?**

Which of the following is the rank of the numbers

$a = \frac{13}{11}$ $b = \frac{133}{131}$ $c = \frac{1333}{1331}$ from smaller to larger?

A) a < c < b B) a < b < c C) b < c < a

D) c < b < a E) c < a < b

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. B	**4. A**	**7. D**	**10. E**	**13. B**	**16. D**
2. A	**5. D**	**8. B**	**11. D**	**14. B**	
3. E	**6. D**	**9. D**	**12. D**	**15. C**	

1. $\underbrace{\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\dots+\frac{1}{4}}_{\text{64 Terim / Terms}} = ?$

A) 2 B) 4 C) 16 D) 32 E) 64

2. $1+\frac{2-\frac{1}{3}}{1-\frac{1}{4}} : \left(\frac{9}{20}\right)^{-1} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\frac{1}{0{,}1}+\frac{2}{0{,}2}+\frac{3}{0{,}3}-\frac{5}{0{,}5} = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

4. $\frac{0{,}ab}{a{,}b}+\frac{0{,}cd}{c{,}d} = ?$

A) 0,1 B) 0,2 C) 0,01 D) 0,001 E) 0,02

5. $(10)^{-1} : \frac{0{,}x}{x} - (-1)^0 = ?$

A) –2 B) –1 C) 0 D) 1 E) 2

6. $a = \frac{3{,}\overline{6}}{11} \Rightarrow 0{,}\overline{3}\cdot a = ?$

A) 1 B) $\frac{1}{5}$ C) $\frac{1}{9}$ D) $\frac{1}{10}$ E) $\frac{1}{12}$

7. $\left(\frac{1}{2}+\frac{1}{3}-\frac{1}{6}\right)\cdot\left(-1\frac{1}{2}\right) = ?$

A) –2 B) –1 C) 0 D) 1 E) 2

8. $\left(-\frac{99}{44}\right)^0 - \left(\frac{1}{22}\right)^{-1} : 2 = ?$

A) –8 B) –9 C) –10 D) –11 E) –12

9. $\dfrac{\frac{1}{4}+\frac{2}{4}+\frac{3}{4}+\ldots+\frac{n}{4}}{\frac{1}{2}+\frac{2}{2}+\frac{3}{2}+\ldots+\frac{n}{2}}=?$

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 4

10. $a=0{,}0\bar{2},\ b=0{,}\overline{22}\ \Rightarrow\ \dfrac{a-b}{a+b}=?$

A) $-\frac{9}{11}$ B) -1 C) 0 D) $\frac{5}{6}$ E) $\frac{6}{5}$

11. $\dfrac{\left(57+\frac{3}{2}\right)\cdot\left(60+\frac{4}{5}\right)}{\left(58+\frac{1}{2}\right)\cdot\left(59+\frac{9}{5}\right)}=?$

A) 1 B) 2 C) 3 D) 4 E) 5

12. $\dfrac{8}{4-\frac{3}{1+x}}=4\ \Rightarrow\ x=?$

A) 1 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{5}$

13. $\dfrac{\frac{1}{3}-1\frac{1}{3}}{\frac{4}{5}-1\frac{1}{5}}=?$

A) $\frac{2}{5}$ B) $\frac{5}{2}$ C) $\frac{3}{5}$ D) $\frac{5}{3}$ E) 1

14. $A=2\frac{6}{7}+3\frac{5}{6}+4\frac{4}{5}\ \Rightarrow\ \frac{1}{7}-\frac{5}{6}+\frac{1}{5}=?$

A) 8 – A B) 9 – A C) 10 – A D) 11 – A E) 12 – A

15. $a\in\mathbb{N}$,

$\frac{1}{2}<\frac{a}{16}<\frac{5}{2}\ \Rightarrow\ \sum a=?$

A) 701 B) 712 C) 729 D) 734 E) 744

16. $x\in\mathbb{N}$,

$\frac{3}{5}<\frac{9}{x}<\frac{27}{41}\ \Rightarrow\ x=?$

A) 10 B) 11 C) 12 D) 13 E) 14

Yanıtlar / Answers

1. C	4. B	7. B	10. A	13. B	16. E
2. B	5. C	8. C	11. A	14. D	
3. B	6. C	9. B	12. B	15. E	

1. $\frac{0,22}{4,4}+\frac{0,02}{5}=?$

A) 0,1 B) 0,03 C) 0,64
D) 0,009 E) 0,054

2. $\frac{0,0008}{0,05}:\frac{0,02}{0,015}=?$

A) 1,2 B) 1,6 C) 0,08
D) 0,004 E) 0,012

3. $\frac{0,12}{0,3}+\frac{8}{0,02}+\frac{0,06}{0,002}=?$

A) 430 B) 430,4 C) 432
D) 432,4 E) 450

4. $\left(0,8-0,3:0,5+\frac{3}{5}\right)\cdot\frac{2}{0,2}=?$

A) 4 B) 5 C) 6 D) 7 E) 8

5. $\frac{0,003}{0,3}+\frac{62,5}{6,25}-0,01=?$

A) 100,1 B) 100 C) 10 D) 1 E) 0

6. $\frac{1}{3}+\frac{1}{0,3}+\frac{1}{0,03}=?$

A) 19 B) 23 C) 29 D) 31 E) 37

7. $5-\frac{7}{10}+\frac{71}{1000}=?$

A) 5,001 B) 7,771 C) 4,229
D) 4,371 E) 4,971

8. $\frac{1,2}{0,2}-\frac{1,2}{0,15}+\frac{1,6}{0,2}=?$

A) 14 B) 12 C) 8 D) 6 E) 4

9. $\dfrac{4{,}68}{0{,}117}+\dfrac{10{,}4}{0{,}052}-\dfrac{9}{0{,}3}=?$

A) 195 B) 200 C) 205 D) 210 E) 215

10. $\dfrac{2+0{,}2}{1-0{,}8}-\dfrac{0{,}4-0{,}04}{0{,}36}=?$

A) 8 B) 10 C) 12 D) 14 E) 16

11. $\dfrac{0{,}032}{0{,}24}:\left(\dfrac{0{,}3}{0{,}02}\right)^{-1}=?$

A) 2 B) $\dfrac{3}{2}$ C) 1 D) $\dfrac{2}{3}$ E) $\dfrac{1}{2}$

12. $\dfrac{16{,}32}{0{,}8}-\dfrac{2}{0{,}5}=?$

A) 6 B) 8 C) 12 D) 16,4 E) 18,2

13. $\dfrac{0{,}03}{0{,}12}-\dfrac{0{,}003}{0{,}01}:\dfrac{0{,}12}{0{,}5}=?$

A) 3 B) 1 C) 0 D) –1 E) –2

14. $\dfrac{0{,}5}{0{,}2+\dfrac{1}{\dfrac{1}{0{,}2}}}=?$

A) $\dfrac{3}{4}$ B) $\dfrac{5}{4}$ C) $\dfrac{7}{4}$

D) 2 E) $\dfrac{9}{4}$

15. $\dfrac{\dfrac{4}{5}+0{,}25}{2+\dfrac{1}{2+\dfrac{1}{0{,}1}}}=?$

A) 0,102 B) 0,304 C) 0,405

D) 0,504 E) 0,603

16. $1<a<3$,

$\dfrac{0{,}05\cdot 0{,}012}{0{,}3}=a\cdot 10^{k}$

$\Rightarrow$ **a + k = ?**

A) 1 B) 0 C) –1 D) –2 E) –3

Yanıtlar / Answers

1. E	4. E	7. D	10. B	13. D	16. C
2. E	5. C	8. D	11. A	14. B	
3. B	6. E	9. D	12. D	15. D	

1. $0{,}1 + 0{,}2 - 0{,}3 = ?$

A) 0,1 B) 0,2 C) 0 D) –0,1 E) –0,2

2. $\dfrac{0{,}5}{0{,}01} \cdot 0{,}2 = ?$

A) 0,1 B) 10 C) 0,2 D) 20 E) 0,5

3. $\dfrac{0{,}99}{0{,}33} + \dfrac{0{,}44}{0{,}11} - \dfrac{0{,}4}{0{,}2} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

4. $\dfrac{2}{0{,}2} + \dfrac{1}{0{,}1} - \dfrac{3}{0{,}3} = ?$

A) 0,1 B) 10 C) 0,3 D) $\dfrac{10}{3}$ E) 0,2

5. $\dfrac{1{,}1}{12{,}1} - \dfrac{1}{1{,}1} = ?$

A) $\dfrac{11}{9}$ B) 1,1 C) $\dfrac{10}{11}$ D) $-\dfrac{9}{11}$ E) $\dfrac{9}{11}$

6. $\dfrac{0{,}3}{3} + \dfrac{0{,}2}{2} - \dfrac{0{,}4}{4} = ?$

A) 0,1 B) 0,2 C) 0,3 D) 0,4 E) 0,5

7. $(0{,}9 - 0{,}3 : 0{,}1) : 3(0{,}3 - 1) = ?$

A) 0,1 B) 1 C) 0 D) –0,1 E) –1

8. $10 - \dfrac{9}{10} + \dfrac{99}{100} = ?$

A) 9,91 B) 99,9 C) 99,1 D) 9,19 E) 10,09

9. $\left.\begin{array}{l} A = 6{,}092 \\ B = 5{,}092 \end{array}\right\} \Rightarrow \mathbf{A^2 - 2AB + B^2 = ?}$

A) 1 B) 10 C) 0,1 D) 12 E) 121

10. $\left.\begin{array}{l} A = 9{,}029 \\ B = 0{,}971 \end{array}\right\} \Rightarrow \mathbf{(A - B)^2 + 4AB = ?}$

A) 1 B) 9 C) 36 D) 64 E) 100

11. $\dfrac{\mathbf{0{,}8}}{\mathbf{0{,}4} + \dfrac{\mathbf{1}}{\dfrac{\mathbf{1}}{\mathbf{0{,}2}}}} = \mathbf{?}$

A) 1 B) $\frac{4}{3}$ C) $\frac{3}{4}$ D) $\frac{1}{2}$ E) $\frac{8}{7}$

12. $\dfrac{0{,}005 \cdot 0{,}004}{0{,}02} = 10^k \Rightarrow \mathbf{k = ?}$

A) –1 B) –2 C) –3 D) –4 E) –5

13. $\dfrac{\mathbf{1{,}11}}{\mathbf{0{,}1}} - \mathbf{0{,}4 : 0{,}4} = ?$

A) 10,1 B) 1,1 C) 0 D) 1 E) 2

14. $\dfrac{\mathbf{0{,}aa}}{\mathbf{aa}} - \mathbf{0{,}00b : 0{,}b = ?}$

A) –1 B) –2 C) 0 D) 1 E) 2

15. $\dfrac{\mathbf{0{,}aaa}}{\mathbf{aaa}} \cdot \dfrac{\mathbf{0{,}b}}{\mathbf{0{,}00b}} \cdot \dfrac{\mathbf{0{,}c}}{\mathbf{0{,}0c}} = \mathbf{?}$

A) 1 B) 0,1 C) 0,2 D) 2 E) 0,3

16. $\dfrac{0{,}7}{0{,}07} + \dfrac{3{,}6}{6} + \dfrac{3}{20} = ?$

A) 1,05 B) 1,75 C) 10,5 D) 10,75 E) 100,7

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. C	**4. B**	**7. B**	**10. E**	**13. A**	**16. D**
2. B	**5. D**	**8. E**	**11. B**	**14. C**	
3. E	**6. A**	**9. A**	**12. C**	**15. A**	

1. $0,2\overline{72} = ?$

A) $\frac{1}{11}$ B) $\frac{2}{11}$ C) $\frac{3}{11}$ D) $\frac{4}{11}$ E) $\frac{5}{11}$

2. $\dfrac{2,\overline{5}+1,\overline{4}}{1,\overline{9}} = ?$

A) 1 B) $\frac{3}{2}$ C) $\frac{4}{3}$ D) 2 E) $\frac{5}{2}$

3. $\dfrac{1+\dfrac{0,0\overline{3}}{1-\dfrac{1}{2}}}{1+0,\overline{2}} = ?$

A) $\frac{27}{55}$ B) $\frac{11}{90}$ C) $\frac{7}{9}$ D) $\frac{9}{11}$ E) $\frac{48}{55}$

4. $\dfrac{0,1\overline{2}-\dfrac{1}{9}}{2-1,\overline{2}} = ?$

A) $\frac{1}{30}$ B) $\frac{1}{35}$ C) $\frac{1}{70}$ D) $\frac{1}{90}$ E) $\frac{1}{120}$

5. $\dfrac{1+\dfrac{1}{0,\overline{3}}}{2-\dfrac{1+0,2}{0,12}}+4 = ?$

A) 1 B) $\frac{2}{3}$ C) $\frac{7}{2}$ D) $\frac{5}{3}$ E) $\frac{7}{3}$

6. $\dfrac{5\cdot 0,3\overline{9}+3\cdot 0,1\overline{3}}{0,1\overline{6}} = ?$

A) $\frac{18}{5}$ B) $\frac{32}{5}$ C) $\frac{48}{5}$ D) $\frac{64}{5}$ E) $\frac{72}{5}$

7. $\dfrac{5,\overline{6}+3,\overline{3}}{2,\overline{8}} = ?$

A) $3\frac{3}{26}$ B) $4\frac{2}{13}$ C) $5\frac{5}{26}$

D) $\frac{9}{26}$ E) $\frac{1}{26}$

8. $x = 0,2 + 0,02 + 0,002 + \ldots$

$y = 0,5 + 0,05 + 0,005 + \ldots \Rightarrow$ **$2x + y = ?$**

A) $\frac{1}{4}$ B) $\frac{1}{3}$ C) $\frac{1}{2}$ D) 1 E) 2

9. a = 1,555...

b = 1,333...

$\Rightarrow \frac{\mathbf{1}}{\mathbf{a}} + \frac{\mathbf{b}}{\mathbf{2}} = \mathbf{?}$

A) $\frac{55}{42}$ B) $\frac{47}{198}$ C) $\frac{67}{198}$ D) $\frac{113}{99}$ E) 1

10. $\left.\begin{array}{l} x = 0,\overline{2} \\ y = 0,0\overline{2} \end{array}\right| \Rightarrow \frac{\mathbf{1}}{\mathbf{x}} + \frac{\mathbf{1}}{\mathbf{y}} = \mathbf{?}$

A) 49 B) $\frac{99}{2}$ C) 50 D) $\frac{101}{2}$ E) 51

11. $a = 0,\overline{3}$ $b = 0,\overline{5}$

$\frac{\mathbf{1}}{\mathbf{a}} + \frac{\mathbf{1}}{\mathbf{b}} + \frac{\mathbf{1}}{\mathbf{ab}} = \mathbf{?}$

A) 9 B) $\frac{47}{5}$ C) $\frac{49}{5}$ D) $\frac{51}{5}$ E) $\frac{53}{5}$

12. $\frac{x}{x+1} = 0,0\overline{3} \Rightarrow \mathbf{x = ?}$

A) 25 B) 29 C) $\frac{1}{29}$ D) $\frac{3}{29}$ E) $\frac{5}{29}$

13. $0,\overline{6} + 0,\overline{7} + 0,\overline{8} = \frac{a+4}{a}$

$\Rightarrow$ **a = ?**

A) 3 B) 4 C) 5 D) 7 E) 9

14. $\frac{\mathbf{0,\overline{x} + 0,\overline{xx}}}{\mathbf{x,\overline{x} + 0,\overline{x}}} = \mathbf{?}$

A) $\frac{1}{6}$ B) $\frac{1}{9}$ C) $\frac{2}{9}$ D) $\frac{2}{11}$ E) $\frac{3}{11}$

15. a, b $\in$ $\mathbf{N^+}$,

$0,\overline{a} + 0,b\overline{a} = \frac{17}{30}$

$\Rightarrow$ **a + b = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

16. $a = 0,\overline{7} = 0,777\ldots7\ldots \Rightarrow \sqrt{a} = ?$

A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{5}}{2}$

D) $\frac{\sqrt{5}}{3}$ E) $\frac{\sqrt{7}}{3}$

[19 MAYIS ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. C	**4. C**	**7. A**	**10. B**	**13. A**	**16. E**
2. D	**5. C**	**8. D**	**11. D**	**14. D**	
3. E	**6. E**	**9. A**	**12. C**	**15. E**	

1. **$1,0\overline{12} = ?$**

A) $\frac{167}{165}$ B) $\frac{169}{195}$ C) $\frac{1012}{99}$

D) $\frac{1013}{90}$ E) $\frac{1012}{89}$

2. **$5,0\overline{5} = ?$**

A) $\frac{91}{18}$ B) $\frac{92}{19}$ C) $\frac{93}{90}$

D) $\frac{94}{25}$ E) $\frac{18}{91}$

3. **$(0,\overline{2}+0,\overline{5})\cdot\frac{9}{7} = ?$**

A) 1 B) 2 C) 0,1 D) 0,2 E) 0,9

4. **$\frac{a,\overline{a}+b,\overline{b}}{a0+b0} = ?$**

A) $\frac{1}{10}$ B) $\frac{1}{9}$ C) 1 D) 2 E) 9

5. **$\frac{a,bc+b,ca+c,ab}{10a+10b+10c} = ?$**

A) 0,001 B) 0,011 C) 0,111

D) 0,101 E) 0,1

6. **$\frac{0,\overline{4}+0,\overline{6}}{0,9} = ?$**

A) 1 B) $\frac{1}{9}$ C) $\frac{1}{10}$

D) $\frac{81}{100}$ E) $\frac{100}{81}$

7. **$\frac{2,\overline{7}+1,\overline{6}}{\frac{10}{3}+\frac{10}{9}} = ?$**

A) 1 B) 2 C) $\frac{9}{10}$

D) $\frac{1}{3}$ E) $\frac{10}{9}$

8. **$\frac{x,0\overline{x}+y,0\overline{y}}{xy+yx}\cdot\frac{11}{91} = ?$**

A) 1 B) 11 C) $\frac{1}{90}$

D) 90 E) $\frac{1}{11}$

9. $0,9 + 0,09 + 0,009 + \ldots = ?$

A) 1
B) 0,9
C) $\frac{10}{9}$
D) $\frac{1}{9}$
E) 0,1

10. $A = 0,6 + 0,06 + \ldots$

$B = 0,1 + 0,01 + 0,001 + \ldots$

$\Rightarrow \mathbf{A - B = ?}$

A) 1
B) $\frac{1}{9}$
C) 0,9
D) $\frac{5}{9}$
E) 9

11.
$$\left.\begin{aligned} A &= \frac{3}{10} + \frac{3}{100} + \frac{3}{1000} + \ldots \\ B &= \frac{4}{10} + \frac{4}{100} + \frac{4}{1000} + \ldots \end{aligned}\right\} \Rightarrow \mathbf{A + B = ?}$$

A) $\frac{4}{9}$
B) $\frac{5}{9}$
C) $\frac{2}{3}$
D) $\frac{7}{9}$
E) $\frac{8}{9}$

12.
$$\frac{0,b\overline{a} + 0,a\overline{b}}{\dfrac{1}{ab - ba}} = 3 \Rightarrow \mathbf{a^2 - b^2 = ?}$$

A) 1
B) $\frac{1}{9}$
C) $\frac{1}{10}$
D) 0,9
E) 3

13.
$$\left.\begin{aligned} A &= 2,2828\ldots \\ B &= 1,1010\ldots \end{aligned}\right\} \Rightarrow \mathbf{\frac{A}{B} = ?}$$

A) $\frac{226}{109}$
B) $\frac{224}{109}$
C) $\frac{222}{109}$
D) $\frac{220}{10}$
E) $\frac{218}{109}$

14.
$$\left.\begin{aligned} A &= 0,x\overline{1} \\ B &= 0,1\overline{x} \end{aligned}\right\}, \ A + B = \frac{2}{9} \Rightarrow \mathbf{x = ?}$$

A) 1
B) 2
C) 3
D) 4
E) 5

15.
$$\mathbf{\frac{0,a + 0,a + 0,00a\ldots}{0,b + 0,b + 0,00b\ldots} \cdot \frac{bb}{aa} = ?}$$

A) 1
B) a
C) a + b
D) b
E) $\frac{1}{9}$

16.
$$\mathbf{\frac{\dfrac{15}{0,3} + \dfrac{1}{0,1}}{\dfrac{0,06}{0,003} - \dfrac{1}{0,2}} = ?}$$

A) 4
B) $\frac{11}{3}$
C) $\frac{10}{3}$
D) 3
E) $\frac{8}{3}$

[EGE ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

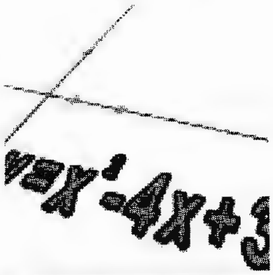
1. A	4. B	7. A	10. D	13. A	16. A
2. A	5. C	8. A	11. D	14. A	
3. A	6. E	9. A	12. E	15. A	

ÜNİTE 2
UNIT

Atiyah, Sir Michael Francis [1929 –]

Topoloji, geometri, analiz, cebirsel değişimlerin transdantal teorisi, diferansiyel işlemler ve kuantum alan teorisine önemli katkıları olan İngiliz matematikçidir. 1966'da Field Medal, 2004'de Abel ödülü ile ödüllendirilmiştir.

British mathematician who made important contributions in topology, geometry, analysis, the transcendantal theory of algebraic varieties, differential operators and quantum field theory. Awarded the Fields Medal in 1966 and the Abel Prize in 2004.



- ✓ **KONU ÖZETLERİ** .... **95 – 98**
- ✓ **ÖZDEŞLİKLER ve ÇARPANLARA AYIRMA** .... **99 – 142**
- ✓ **ORAN ve ORANTI** .... **143 – 174**

- ✓ SUMMARYS .... 95 – 98
- ✓ IDENTITIES and FACTORIZATION .... 99 – 142
- ✓ RATIO and PROPORTION .... 143 – 174

BU SAYFADA KONU MATERYALİ YOKTUR.

NO SUBJECT MATERIAL ON THIS PAGE.

ÖZDEŞLİKLER / IDENTITIES

Tanım: Bilinmeyenlerinin her gerçek değeri için doğru olan eşitliklere özdeşlik denir.

Definition: The equalities that holds true for all of their unknowns real values are called identities.

- $(a + b)^2 = a^2 + 2ab + b^2$
- $(a - b)^2 = a^2 - 2ab + b^2$
- $(a + b + c)^2 = a^2 + b^2 + c^2 + 2 \cdot (ab + ac + bc)$
- $(a + b)^3 = a^3 + 3a^2 b + 3ab^2 + b^3$
- $(a - b)^3 = a^3 - 3a^2 b + 3ab^2 - b^3$

İKİ KARE FARKI / DIFFERENCE of TWO SQUARES

$a - b) \cdot (a + b) = a^2 + ab - ba - b^2 = a^2 - b^2 \Rightarrow \mathbf{a^2 - b^2 = (a - b) \cdot (a + b)}$

İKİ KÜP TOPLAMI ve FARKI
SUM and DIFFERENCE of TWO CUBES

- $a^3 - b^3 = (a - b) \cdot (a^2 + ab + b^2)$
- $a^3 + b^3 = (a + b) \cdot (a^2 - ab + b^2)$

ÇARPANLARA AYIRMA / FACTORIZATION

Tanım: Toplam veya fark şeklinde verilen ifadelerin çarpım şeklinde yazılmasına bu ifadenin çapranlarına ayrılmış biçimi denir.

Definition: Writing the expressions which are given in the form of sum or difference in the form of product is called factorising.

$ax + bx + cx + \ldots\ldots + zx = (a + b + c + \ldots + z) \cdot x$

$ax - bx - cx - \ldots\ldots - zx = (a - b - c - \ldots - z) \cdot x$

$a^n \pm b^n$ İFADELERİNİN ÇARPANLARA AYRILMASI
FACTORIZATION of $a^n \pm b^n$

n bir doğal sayı olmak üzere

$a^n - b^n = (a - b) \cdot (a^{n-1} + a^{n-2} b + a^{n-3} b^2 + \ldots + b^{n-1})$

n tek doğal sayı olmak üzere

$a^n + b^n = (a + b) \cdot (a^{n-1} - a^{n-2} b + a^{n-3} b^2 - \ldots + b^{n-1})$ **eşitlikleri vardır.**

Provided that n is a natural number, there are,

$a^n - b^n = (a - b) \cdot (a^{n-1} + a^{n-2} b + a^{n-3} b^2 + \ldots + b^{n-1})$

Provided that n is an odd natural number, there are,

$a^n + b^n = (a + b) \cdot (a^{n-1} - a^{n-2} b + a^{n-3} b^2 - \ldots + b^{n-1})$

$ax^2 + bx + c$ İFADELERİN ÇARPANLARA AYRILMASI
FACTORIZATION of $ax^2 + bx + c$

$m, n, k, \ell \in R$,

$c = m \cdot n, \quad a = k \cdot \ell, \quad b = k \cdot n + \ell \cdot m$

$\Rightarrow ax^2 + bx + c = (k \cdot x + m) \cdot (l \cdot x + n)$

➡ $\mathbf{x - y = -(y - x)}$

ORAN ve ORANTI / RATIO and PROPORTION

Tanım: Her ikisi de aynı anda sıfır olmayan aynı birimden iki niceliğin bölümüne **oran** denir.

Definition: The quotient of the same unit, both of which are not zero at the same time is called **ratio**.

$$\frac{3kg}{2kg}=\frac{3}{2}, \quad \frac{3cm}{5cm}=\frac{3}{5}, \quad \frac{3\,lt}{6lt}=\frac{1}{2}$$

Tanım: İki veya daha fazla oranın eşitliğine **orantı** denir.

Definition: The equality of two or more ratios is called **proportion.**

$$\frac{a}{b}=k,\ \frac{c}{d}=k,\ \frac{e}{f}=k \Rightarrow \frac{a}{b}=\frac{c}{d}=\frac{e}{f}=k$$

Yukarıdaki ifade bir orantı olup k, orantı sabitidir.

$\frac{2}{3}=\frac{4}{6}=\frac{6}{9}=......=\frac{2n}{3n}$ bir orantıdır. Bu orantının orantı sabiti $k=\frac{2}{3}$ tür.

The expression above is a proportion and K is called the proportionality constant.

$\frac{2}{3}=\frac{4}{6}=\frac{6}{9}=......=\frac{2n}{3n}$ is a proportion. Here, $k=\frac{2}{3}$ is the proportionality constant.

ORAN ve ORANTININ ÖZELLİKLERİ / PROPERTIES of RATIO and PROPORTION

1. $a:b=c:d \Rightarrow \frac{a}{c}=\frac{b}{d}$

$a:b:c=d:e:f \Rightarrow \frac{a}{d}=\frac{b}{e}=\frac{c}{f}$

2. $\frac{a}{b}=\frac{c}{d} \Rightarrow$

I. $a\cdot d=b\cdot c$ **III.** $\frac{d}{c}=\frac{c}{a}$

II. $\frac{a}{c}=\frac{b}{d}$ **IV.** $\frac{b}{a}=\frac{d}{c}$

3. $\frac{a}{b}=\frac{c}{d}=k \Rightarrow$

I. $\frac{a+c}{b+d}=k$

II. $\frac{m\cdot a}{m\cdot b}=\frac{t\cdot c}{t\cdot d}=\frac{m\cdot a+t\cdot c}{m\cdot b+t\cdot d}=k$

4. $\frac{a}{b}=\frac{c}{d} \Rightarrow \frac{m\cdot a+n\cdot b}{t\cdot a+l\cdot b}=\frac{m\cdot c+n\cdot d}{t\cdot c+l\cdot d}$

5. **i.** a ve b doğru orantılı ise $\frac{a}{b}=k$

If a and b are directly proportional, then $\frac{a}{b}=k$

ii. a ve b ters orantılı ise

If a and b are inversely proportional to each other,

then a · b = k

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $\left.\begin{array}{l} a \cdot b = 7 \\ a + b = 4 \end{array}\right\} \Rightarrow \mathbf{a^2 + b^2 = ?}$

Yanıt / The answer is **2**

2. $\left.\begin{array}{l} a - 3b = 8 \\ a \cdot b = 6 \end{array}\right\} \Rightarrow \mathbf{a^2 + 9b^2 = ?}$

Yanıt / The answer is **100**

3. $\left.\begin{array}{l} x^2 + y^2 = 24 \\ x \cdot y = 6 \end{array}\right\} \Rightarrow \mathbf{|x + y| = ?}$

Yanıt / The answer is **6**

4. $\left.\begin{array}{l} a - b = 8 \\ a \cdot b = 9 \end{array}\right\} \Rightarrow \mathbf{|a + b| = ?}$

Yanıt / The answer is **10**

5. $\left.\begin{array}{l} x^2 + y^2 = 20 \\ x \cdot y = 8 \end{array}\right\} \Rightarrow \mathbf{x^4 + y^4 = ?}$

Yanıt / The answer is **272**

6. $\left.\begin{array}{l} x - y = 6 \\ x \cdot y = 7 \end{array}\right\} \Rightarrow \mathbf{x^2 - y^2 = ?}$

Yanıt / The answer is **48**

yos lovers

7. $x-\frac{1}{x}=4 \Rightarrow \mathbf{x^2+\frac{1}{x^2}=?}$

Yanıt / The answer is **18**

8. $x+\frac{2}{x}=5 \Rightarrow \mathbf{x^2+\frac{4}{x^2}=?}$

Yanıt / The answer is **21**

9. $a+\frac{1}{a}=5 \Rightarrow \mathbf{\frac{a^6+a^2}{a^4}=?}$

Yanıt / The answer is **23**

10. $x^2+\frac{1}{x^2}=5 \Rightarrow \mathbf{x+\frac{1}{x}=?}$

Yanıt / The answer is $\sqrt{7}$

11. $3^x+3^{-x}=7 \Rightarrow \mathbf{9^x+9^{-x}=?}$

Yanıt / The answer is **47**

12. $a^2-5a+1=0 \Rightarrow \mathbf{a^2+\frac{1}{a^2}=?}$

Yanıt / The answer is **23**

13. $\left.\begin{array}{l} a+b=4 \\ a\cdot b=6 \end{array}\right\} \Rightarrow \mathbf{a^3+b^3=?}$

Yanıt / The answer is **–8**

14. $\left.\begin{array}{l} a-b=3 \\ a\cdot b=7 \end{array}\right\} \Rightarrow \mathbf{a^3-b^3=?}$

Yanıt / The answer is **90**

15. $x-\frac{2}{x}=4 \Rightarrow \mathbf{x^3-\frac{8}{x^3}=?}$

Yanıt / The answer is **88**

16. $\left.\begin{array}{l} x-y=2 \\ x^3-y^3=5 \end{array}\right\} \Rightarrow \mathbf{x\cdot y=?}$

Yanıt / The answer is $\mathbf{-\frac{1}{2}}$

17. $\left.\begin{array}{l} x^3+y^3=19 \\ xy(x+y)=-6 \end{array}\right\} \Rightarrow \mathbf{x+y=?}$

Yanıt / The answer is **1**

18. $\left.\begin{array}{l} x+y=4 \\ x^2+y^2=12 \end{array}\right\} \Rightarrow \mathbf{x^3+y^3=?}$

Yanıt / The answer is **40**

19. $a\cdot b = a + b = 5 \Rightarrow \mathbf{a^3 + b^3 = ?}$

Yanıt / The answer is **50**

20.

$$\left.\begin{array}{l} a\neq b \\ a^3-b^3=a^2-b^2 \\ a+b=3 \end{array}\right| \Rightarrow a\cdot \mathbf{b} = \mathbf{?}$$

Yanıt / The answer is **6**

21. $x^2-3x+1=0 \Rightarrow \dfrac{\mathbf{x^6+1}}{\mathbf{x^3}} = \mathbf{?}$

Yanıt / The answer is **18**

22.

$$\left.\begin{array}{l} a+b=6 \\ c-a=2 \end{array}\right\} \Rightarrow \mathbf{a^2+ab-ac-bc=?}$$

Yanıt / The answer is **–12**

23.

$$\left.\begin{array}{l} a^2+b^2=16 \\ a-b=2 \end{array}\right\} \Rightarrow \mathbf{a^3-b^3=?}$$

Yanıt / The answer is **44**

24. $A\in R^+$,

$$\frac{x^2}{y^2}+\frac{y^2}{x^2}=62 \Rightarrow \mathbf{A}=\frac{x}{\mathbf{y}}+\frac{y}{\mathbf{x}}=?$$

Yanıt / The answer is **8**

$$\left.\begin{matrix} x^2y - y^2x = 11 \\ x^3 - y^3 = 60 \end{matrix}\right\} \Rightarrow \mathbf{x - y = ?}$$

Yanıt / The answer is **3**

---

2. $x^2 - a^2 = 14,$

$a^2 - y^2 = 6$

$x + y = 5 \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is $\frac{1}{2}$

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3. $x + y = 4,$

$x \cdot y = 3 \Rightarrow \mathbf{x^3 + y^3 = ?}$

Yanıt / The answer is **28**

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4. $2x - \frac{1}{x} = 6 \Rightarrow \mathbf{8x^3 - \frac{1}{x^3} = ?}$

Yanıt / The answer is **252**

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5. $x + y = 11,$

$z = 5 \Rightarrow \mathbf{x^2 - z^2 + 2xy + y^2 = ?}$

Yanıt / The answer is **96**

---

6. $x \neq 0,$

$x - \frac{1}{x} = 2 \Rightarrow \mathbf{x^3 - \frac{1}{x^3} = ?}$

Yanıt / The answer is **14**

7. $\frac{a^3b-a^2b^2}{b^2-a^2}\cdot\left(\frac{ab}{a+b}\right)^{-1}=?$

Yanıt / The answer is **$-a$**

8. $x \neq 0,$

$x+x^{-1}=5 \Rightarrow x-\frac{1}{x}=?$

Yanıt / The answer is $\sqrt{21}$

9. $a^3-b^3=387$ ve (and) $a-b=3$

$\Rightarrow a\cdot b=?$

Yanıt / The answer is **40**

10. $\left.\begin{aligned} a+b&=12\\ a^2+b^2&=84\end{aligned}\right\}\Rightarrow a\cdot b=?$

Yanıt / The answer is **30**

11. $(3x+1)^2=9x^2+97 \Rightarrow x=?$

Yanıt / The answer is **16**

12. $(a+b)^2=4ab \Rightarrow a-b+3=?$

Yanıt / The answer is **3**

13. $\left.\begin{array}{l} a^2+b^2+a\cdot b=60 \\ a-b=6 \end{array}\right\} \Rightarrow \mathbf{a\cdot b=?}$

Yanıt / The answer is **8**

14. $\left.\begin{array}{l} \dfrac{x^2-y^2}{x^2y-xy^2}=4 \\ x\cdot y=3 \end{array}\right\} \Rightarrow \mathbf{x^2+y^2=?}$

Yanıt / The answer is **138**

15. $x, y \in Z^+$

$4x^2-y^2=23 \Rightarrow \mathbf{x+y=?}$

Yanıt / The answer is **17**

16. $a \neq 0$

$\left.\begin{array}{l} 1-\dfrac{b}{a}=\dfrac{3}{a} \\ a\cdot b=10 \end{array}\right\} \Rightarrow \mathbf{a^2+b^2=?}$

Yanıt / The answer is **29**

17. $\dfrac{a}{b}+\dfrac{4b}{a}=4 \Rightarrow \mathbf{\dfrac{a+b}{a-b}=?}$

Yanıt / The answer is **3**

18. $\left.\begin{array}{l} a^2-b^2=25 \\ \dfrac{1}{a-b}+\dfrac{1}{a+b}=\dfrac{26}{25} \end{array}\right\} \Rightarrow \mathbf{a-b=?}$

Yanıt / The answer is **1**

19. $$\left.\begin{array}{l} b-a^2=x \\ b^2+a=y \\ a-b=1 \end{array}\right\} \Rightarrow \mathbf{x+y=?}$$

Yanıt / The answer is **0**

20. $$\frac{a}{b}+\frac{b}{a}=8 \Rightarrow \frac{\mathbf{(a-b)^2}}{\mathbf{a \cdot b}}=\mathbf{?}$$

Yanıt / The answer is **6**

21. $$\left.\begin{array}{l} a+b=7 \\ a \cdot b=8 \end{array}\right\} \Rightarrow \frac{\mathbf{a^2}}{\mathbf{a-1}}+\frac{\mathbf{b^2}}{\mathbf{b-1}}=\mathbf{?}$$

Yanıt / The answer is $\mathbf{\frac{23}{2}}$

22. $$\left.\begin{array}{l} a^2-c^2=55 \\ c^2-b^2=13 \\ a-b=4 \end{array}\right\} \Rightarrow \mathbf{a+b=?}$$

Yanıt / The answer is **17**

23. $$\left.\begin{array}{l} a-c=c-b=5 \\ a \cdot b=24 \end{array}\right\} \Rightarrow \mathbf{a^2+b^2=?}$$

Yanıt / The answer is **148**

24. $a>b$

$$\left.\begin{array}{l} a^2-ab=75 \\ ab-b^2=50 \end{array}\right\} \Rightarrow \mathbf{a+b=?}$$

Yanıt / The answer is **25**

$a-b=b-c=2$

$\Rightarrow \mathbf{a^2-2b^2+c^2+1=?}$

Yanıt / The answer is **9**

---

2. $\dfrac{x^2-bx-12}{x^2+10x+c}=\dfrac{x-2}{x+4} \Rightarrow \mathbf{b+c=?}$

Yanıt / The answer is **20**

---

3. $\dfrac{(200^2-25^2)-625}{62}=x^4 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **5**

---

4. $\left.\begin{array}{l} a=17{,}49 \\ b=12{,}51 \end{array}\right\} \Rightarrow \mathbf{(a-b)^2+4ab=?}$

Yanıt / The answer is **900**

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5. $\dfrac{200^2-20^2}{50^2-5^2}=8\cdot x \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **2**

---

6. $\dfrac{(325^2-25^2)-300\cdot 50}{6a}=600 \Rightarrow \mathbf{a=?}$

Yanıt / The answer is **25**

7. $37 \cdot 53 = a^2 - b^2$

$\Rightarrow$ **b = ?**

Yanıt / The answer is **8**

8. **(10002)·(9998) = ?**

Yanıt / The answer is $10^8 - 4$

9. $\dfrac{52^2 - 48 \cdot 104 + 48^2}{52^2 - 48^2} = ?$

Yanıt / The answer is **0,04**

10. x = 2, 998

y = 0, 998

$\Rightarrow x^3 - 3x^2y + 3xy^2 - y^3 = ?$

Yanıt / The answer is **8**

11. $\dfrac{\frac{100}{99} + 1}{\left(\frac{100}{99}\right)^2 - 1} = ?$

Yanıt / The answer is **99**

12. $x = \dfrac{2}{5}$, $y = \dfrac{3}{5}$

$\Rightarrow \dfrac{(x-y)^2 + 4xy}{x^3 + y^3} = ?$

Yanıt / The answer is $\dfrac{25}{7}$

13. $a = 100002$

$\Rightarrow \mathbf{a^2 - 4a = ?}$

Yanıt / The answer is $\mathbf{10^{10} - 4}$

14. $3(a-2)^2 + 5(b+1)^2 = 0$

$\Rightarrow \mathbf{5b + 3a = ?}$

Yanıt / The answer is **1**

15. $\left.\begin{array}{l} a, b, c \in R^+ \\ \dfrac{a}{b} = \dfrac{b}{c} \\ a^2 + 9ac + 6ab = 36 \end{array}\right\} \Rightarrow \mathbf{a + 3b = ?}$

Yanıt / The answer is **6**

16. $a + b = 8$

$\Rightarrow \mathbf{4a^2 + 4b^2 + a^2b + ab^2 = ?}$

Yanıt / The answer is **256**

17. $\left.\begin{array}{l} 5x - 4y = 12 \\ 4x - 5y = 6 \end{array}\right\} \Rightarrow \mathbf{x^2 - y^2 = ?}$

Yanıt / The answer is **12**

18. $x, y, \in R^+,$

$x^2 - xy - 6y^2 = 0 \Rightarrow \mathbf{\dfrac{x^2 + y^2}{x \cdot y} = ?}$

Yanıt / The answer is $\mathbf{\dfrac{10}{3}}$

19. $\frac{a}{b}+\frac{b}{a}=5 \Rightarrow \mathbf{\frac{a^4+b^4}{a^2 \cdot b^2}=?}$

Yanıt / The answer is **23**

20. $\left.\begin{array}{l} a^2=3b+7 \\ b^2=3a+7 \end{array}\right\} \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is **–3**

21. $\left.\begin{array}{l} a+b=3 \\ a \cdot b=4 \end{array}\right\} \Rightarrow \mathbf{\frac{a^3+b^3+ab}{a^2+b^2}=?}$

Yanıt / The answer is **–5**

22. $a=3\sqrt{2}+1 \Rightarrow \mathbf{a^2-2a+9=?}$

Yanıt / The answer is **26**

23. $x = 199996$,

$x^2+8x=a \cdot 10^b-c$

$\Rightarrow \mathbf{a+b+c=?}$

Yanıt / The answer is **30**

24. $a^2+b^2+4a+6b+13=0$

$\Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is **–5**

$$\frac{x}{y}-\frac{y}{x}=2 \Rightarrow \mathbf{\frac{x^6-y^6}{x^3\cdot y^3}=?}$$

Yanıt / The answer is **14**

---

2. $$\left.\begin{matrix} b=a+4 \\ b^2=a^2+4 \end{matrix}\right\} \Rightarrow \mathbf{3a-b=?}$$

Yanıt / The answer is **–7**

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3. $$\left.\begin{matrix} x^3+y^3=45 \\ x+y=9 \end{matrix}\right\} \Rightarrow \mathbf{3\cdot x\cdot y=?}$$

Yanıt / The answer is **76**

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4. $$\left.\begin{matrix} 3ab^2+a^3=63 \\ 3a^2b+b^3=62 \end{matrix}\right\} \Rightarrow \mathbf{a+b=?}$$

Yanıt / The answer is **5**

---

5. $a^2-a-1=0 \Rightarrow \mathbf{a^3+1=?}$

Yanıt / The answer is **2a + 2**

---

6. $$\left.\begin{matrix} a^3-b^3=13 \\ b^3-c^3=17 \\ a-c=5 \end{matrix}\right\} \Rightarrow \mathbf{(a+c)^2-ac=?}$$

Yanıt / The answer is **6**

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7. $\left.\begin{array}{l} a(a^2+3b^2)=53 \\ b^3+3a^2b=-11 \end{array}\right\} \Rightarrow \mathbf{a-b=?}$

Yanıt / The answer is **4**

8. $x=2\sqrt[3]{3}-1 \Rightarrow \mathbf{x^3+3x^2+3x=?}$

Yanıt / The answer is **23**

9. $a \neq -3b$,

$a^2-ab=12b^2 \;\Rightarrow\; \mathbf{\dfrac{2a^2+4b^2}{ab}=?}$

Yanıt / The answer is **9**

10. $\left.\begin{array}{l} a+b=4 \\ a\cdot b=3 \end{array}\right\} \Rightarrow \mathbf{\dfrac{a^2+b^2}{|a-b|}=?}$

Yanıt / The answer is **5**

11. $x-\dfrac{1}{x}=3 \Rightarrow \mathbf{x^3-4x^2+2x-3=?}$

Yanıt / The answer is **–4**

12. $a, b \in Z^+$

$a^3-b^3=19 \Rightarrow \mathbf{a\cdot b=?}$

Yanıt / The answer is **6**

13. $\left.\begin{array}{l} a+b=8 \\ a=5-bc \\ b=5+ac \end{array}\right\} \Rightarrow \mathbf{a^2+b^2=?}$

Yanıt / The answer is **40**

14. $\dfrac{3a}{b}+\dfrac{b}{3a}=2 \Rightarrow \mathbf{\dfrac{4a^2+2b^2}{a(b-a)}=?}$

Yanıt / The answer is **11**

15. $\left.\begin{array}{l} 4x-y=32 \\ 2\sqrt{x}-\sqrt{y}=4 \end{array}\right\} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **9**

16. $a, b > 0$

$(a+b)^2-(a-b)^2=12$

$\dfrac{1}{a^2}+\dfrac{1}{b^2}=4 \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is $\mathbf{\sqrt{42}}$

17. $a, b, c \in R$

$\left.\begin{array}{l} b=a+1 \\ 4ab+c^2=-1 \end{array}\right\} \Rightarrow \mathbf{a=?}$

Yanıt / The answer is $\mathbf{-\dfrac{1}{2}}$

18. $A = x^2 + 4y^2 + 6x - 8y + 16$

$\Rightarrow \mathbf{min(A) = ?}$

Yanıt / The answer is **3**

19. $a > 0\,,\ a^{\frac{1}{6}} + 1 = x$

$$\Rightarrow \frac{(a^{\frac{1}{12}} - 1)\cdot(a^{\frac{1}{12}} + 1)}{a^{\frac{1}{3}} - 1} = ?$$

Yanıt / The answer is $\frac{1}{x}$

---

20. $x - \frac{2}{x+2} = 4$

$$\Rightarrow x^2 + 4x + 4 + \frac{4}{(x+2)^2} = ?$$

Yanıt / The answer is **40**

---

21. $x = \sqrt[3]{3} - 1 \Rightarrow x^3 + 3x^2 + 3x + 3 = ?$

Yanıt / The answer is **5**

---

22. $x = \sqrt[3]{5} - 1$

$$\Rightarrow (x+2)^3 - 3(x+2)^2 + 3x + 5 = ?$$

Yanıt / The answer is **5**

---

23. $a + b + c = 0$

$a \cdot b \cdot c = 12$

$$\Rightarrow (a + b)^2 \cdot (b + c)^2 \cdot (a + c)^2 = ?$$

Yanıt / The answer is **144**

---

24. $a + b + c = 0$

$a \cdot b \cdot c = -20$

$$\Rightarrow (a + b)^3 \cdot (a + c)^3 \cdot (b + c)^3 = ?$$

Yanıt / The answer is **8000**

1. $a^2 - a - 1 = 0 \Rightarrow \mathbf{a^5 - 5a = ?}$

Yanıt / The answer is **3**

2. $a, b, c \in R^+$,

$$\left.\begin{array}{l} a \cdot b = 3 \cdot c \\ b \cdot c = 4 \cdot a \\ a \cdot c = 6 \cdot b \end{array}\right\} \Rightarrow \mathbf{a^2 + b^2 + c^2 = ?}$$

Yanıt / The answer is **54**

3. $a^2 = a + 1 \Rightarrow \mathbf{a^6 = ?}$

Yanıt / The answer is **8a + 5**

4. $a^2 - 3a - 3 = 0 \Rightarrow \dfrac{\mathbf{a-3}}{\mathbf{1 - \dfrac{a-1}{a}}} = \mathbf{?}$

Yanıt / The answer is **3**

5. $a + \dfrac{1}{a+1} = 4 \Rightarrow \mathbf{a^2 + 2a + 1 + \dfrac{1}{a^2 + 2a + 1} = ?}$

Yanıt / The answer is **23**

6. $x^2 - x + 1 = 0 \Rightarrow \mathbf{x^5 = ?}$

Yanıt / The answer is **1 – x**

7. $\dfrac{(x+2)^2-5^2}{x+7}=?$

Yanıt / The answer is $x-3$

8. $\dfrac{x^2+1-2x}{x^2-1}=?$

Yanıt / The answer is $\dfrac{x-1}{x+1}$

9. $\dfrac{4x^2-9y^2}{4x^2-12xy+9y^2}=\dfrac{1}{2} \Rightarrow \dfrac{x}{y}=?$

Yanıt / The answer is $-\dfrac{9}{2}$

10. $\dfrac{x^2-y^2}{x^2+2xy+y^2}:\dfrac{x-y}{x^3+y^3}=?$

Yanıt / The answer is x^2-xy+y^2

11. $\dfrac{(x+y)^2-4xy}{x^2-xy}=4 \Rightarrow \dfrac{y}{x}=?$

Yanıt / The answer is -3

12. $\dfrac{(x-2)\cdot(x^2+2x+4)+7}{x^2-1}=\dfrac{3}{2} \Rightarrow x=?$

Yanıt / The answer is $-\dfrac{1}{2}$

13. $\dfrac{x^2+2xy}{-2y^2-x\cdot y}=?$

Yanıt / The answer is $-\dfrac{x}{y}$

---

14. $\dfrac{x^{2b-2a}-1}{x^{b-a}+1}=?$

Yanıt / The answer is $x^{b-a}-1$

---

15. $\left(\dfrac{1}{x-y}-\dfrac{1}{x+y}\right)\cdot\dfrac{(x+y)^2}{y}=?$

Yanıt / The answer is $\dfrac{2x+2y}{x-y}$

---

16. $\dfrac{x(y^2+1)+y(x^2+1)}{x^2\cdot y^2-1}=?$

Yanıt / The answer is $\dfrac{x+y}{xy-1}$

---

17. $\left(\dfrac{a^3-b^3}{a-b}-\dfrac{a^3+b^3}{a+b}\right):\dfrac{4ab}{a^2-b^2}=?$

Yanıt / The answer is $\dfrac{a^2-b^2}{2}$

---

18. $\dfrac{x^2\cdot y-y^2\cdot x}{y^2-x\cdot y}:\dfrac{x^3-3x^2+2x}{x^2-4}=?$

Yanıt / The answer is $\dfrac{x+2}{1-x}$

19. $\frac{x^4\cdot y-x\cdot y^4}{x^2\cdot y+x\cdot y^2+y^3}\cdot\frac{1}{x\cdot y-x^2}=?$

Yanıt / The answer is -1

20. $\left(7x^2-\frac{1}{7}\right):\left(x+\frac{1}{7}\right)=?$

Yanıt / The answer is $7x-1$

21. $\frac{3}{\frac{1}{x}-1}+\frac{2x^2+2x}{x^2-1}=?$

Yanıt / The answer is $\frac{x}{1-x}$

22. $\frac{(a-b)^2+ab}{a^3+b^3}=?$

Yanıt / The answer is $\frac{1}{a+b}$

23. $\frac{a^2-9a+20}{a^2+2a-24}:\frac{5-a}{2a+12}=?$

Yanıt / The answer is -2

24. $\frac{a^2+2ab+b^2}{2a-4}\cdot\frac{a^2-2a}{a^2+ab}=?$

Yanıt / The answer is $\frac{a+b}{2}$

1. $\left(\frac{x}{x-1}+\frac{1}{x^2-1}\right):\frac{x^3-1}{x+1}=?$

Yanıt / The answer is $\left(\frac{1}{x-1}\right)^2$

2. $\frac{x^{32}-1}{(x^{16}+1)(x^8+1)}=?$

Yanıt / The answer is x^8-1

3. $\left(\frac{a+1}{a^2+4a+3}-\frac{a-1}{a^2+a-2}\right):\frac{1}{a+2}=?$

Yanıt / The answer is $-\frac{1}{a+3}$

4. $\frac{(x-1)(x^2+3x+2)}{(x^2-2x+1)(x+1)}\cdot\frac{x^2-1}{3(x+1)(x+2)}=?$

Yanıt / The answer is $\frac{1}{3}$

5. $\frac{x^3-xy^2}{x^4-2x^3y+x^2y^2}:\frac{x^2+xy}{(xy-x^2)^2}=?$

Yanıt / The answer is $x-y$

6. $\left(\frac{a^2-2a+4}{a+2}-1\right):\left(\frac{a-1}{a+2}\right)=?$

Yanıt / The answer is $a-2$

7. $\dfrac{3x^2+6xy-x-2y}{9x^2-6x+1}=?$

Yanıt / The answer is $\dfrac{x+2y}{3x-1}$

8. $\dfrac{x^2+\dfrac{1}{x}}{\dfrac{1}{x}-x}:\dfrac{x^2-x+1}{1-\dfrac{1}{x}}=?$

Yanıt / The answer is $-\dfrac{1}{x}$

9. $\dfrac{x^2-4x}{x^3-9x}:\dfrac{x^2-2x-8}{x^2-x-6}=?$

Yanıt / The answer is $\dfrac{1}{x+3}$

10. $\dfrac{x^3+2x^2y+xy^2}{x^3-xy^2}:\dfrac{(x^2+xy)^2}{x^3-x^2y}=?$

Yanıt / The answer is $\dfrac{1}{x+y}$

11. $\dfrac{x^3+y^3}{x^2-y^2}:\dfrac{\dfrac{x^2}{y}+y-x}{\dfrac{1}{y}-\dfrac{1}{x}}=?$

Yanıt / The answer is $\dfrac{1}{x}$

12. $\dfrac{x^2-9}{3-x}\cdot\left(1+\dfrac{1-x}{x+3}\right)=?$

Yanıt / The answer is -4

13. $\dfrac{y^2-x^2}{x^2y+xy^2}:\left(\dfrac{x-y}{x}-\dfrac{y-x}{y}\right)=?$

Yanıt / The answer is $-\dfrac{1}{x+y}$

14. $\dfrac{a^2}{a-4}-\dfrac{16-8a}{4-a}=?$

Yanıt / The answer is $a-4$

15. $\dfrac{\dfrac{1}{a}-a}{a-\dfrac{1}{a}}:\dfrac{2}{1-a}=?$

Yanıt / The answer is $\dfrac{a-1}{2}$

16. $\dfrac{x^2-4x+3}{x^2-1}:\dfrac{x^2-9}{x^2+4x+3}+\dfrac{1}{x}=?$

Yanıt / The answer is $\dfrac{1+x}{x}$

17. $\dfrac{a^3-3a^2+2a}{a^2-a}:\dfrac{4-a^2}{2a^2+4a}=?$

Yanıt / The answer is $-2a$

18. $\dfrac{1}{a^2-1}+\dfrac{1}{\dfrac{1}{a^2}-1}=?$

Yanıt / The answer is -1

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19. $\frac{2x(y-1)-2y}{x+y-xy}=?$

Yanıt / The answer is **-2**

20. $(x^4+1)\cdot(x^2+1)\cdot(x+1)\cdot(x-1)=?$

Yanıt / The answer is **x^8-1**

21. $\left(\frac{a^2-\frac{1}{a^2}}{a-\frac{1}{a}}-\frac{1}{a}\right):4a=?$

Yanıt / The answer is $\frac{1}{4}$

22. $1+\frac{a-\frac{1}{a}}{1+\frac{1}{a}}=?$

Yanıt / The answer is **a**

23. $(x^{\frac{1}{16}}+1)\cdot(x^{\frac{1}{8}}+1)\cdot(x^{\frac{1}{4}}+1)\cdot(x^{\frac{1}{2}}+1)=\frac{A}{x^{\frac{1}{16}}-1}$

$\Rightarrow$ **$A=?$**

Yanıt / The answer is **$x-1$**

24. $\frac{1+\frac{1}{a}}{1-\frac{1}{a}}:\frac{a^2+2a+1}{a^2-1}=?$

Yanıt / The answer is **1**

1. $a(a+b)+b(a+b)=16$

$\Rightarrow$ **$|a+b| = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

2. $a^2+ab=15$

$b^2+ab=10$

$\Rightarrow$ **$|a+b| = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\left.\begin{matrix} a-b=6 \\ a\cdot b=10 \end{matrix}\right\} \Rightarrow \mathbf{a^2+b^2=?}$

A) 16 B) 26 C) 36 D) 46 E) 56

4. $\left.\begin{matrix} a+b=12 \\ a\cdot b=20 \end{matrix}\right\} \Rightarrow \mathbf{a^2+b^2=?}$

A) 90 B) 95 C) 97 D) 104 E) 144

5. $\left.\begin{matrix} a+b=10 \\ a\cdot b=9 \end{matrix}\right\} \Rightarrow \mathbf{|a-b|=?}$

A) 4 B) 6 C) 8 D) 10 E) 12

6. $\left.\begin{matrix} a-b=15 \\ a\cdot b=12 \end{matrix}\right\} \Rightarrow \mathbf{|a+b|=?}$

A) $\sqrt{273}$ B) $9\sqrt{3}$ C) $\sqrt{91}$ D) $2\sqrt{91}$ E) $3\sqrt{91}$

7. $\left.\begin{matrix} a(a-b)=49 \\ b(b-a)=32 \end{matrix}\right\} \Rightarrow \mathbf{|a-b|=?}$

A) 3 B) 5 C) 7 D) 9 E) 11

8. $\left.\begin{matrix} x^2+y^2=13 \\ x\cdot y=4 \end{matrix}\right\} \Rightarrow \mathbf{x^4+y^4=?}$

A) 130 B) 132 C) 134 D) 137 E) 139

9. $\left.\begin{aligned} x^5+y^5&=14 \\ x\cdot y&=2 \end{aligned}\right\} \Rightarrow \mathbf{x^{10}+y^{10}=?}$

A) 130 B) 131 C) 132 D) 133 E) 134

10. $x+\frac{1}{x}=8 \Rightarrow \mathbf{\frac{x^4+1}{x^2}=?}$

A) 60 B) 61 C) 62 D) 63 E) 64

11. $x+\frac{1}{x}=4 \Rightarrow \mathbf{\frac{x^6+1}{x^3}=?}$

A) 50 B) 51 C) 52 D) 53 E) 54

12. $x^2-4x+2=0 \Rightarrow \mathbf{x^2+\frac{4}{x^2}=?}$

A) 10 B) 12 C) 14 D) 16 E) 18

13. $\left.\begin{aligned} a+b&=6 \\ a\cdot b&=8 \end{aligned}\right\} \Rightarrow \mathbf{a^3+b^3=?}$

A) 64 B) 68 C) 70 D) 72 E) 76

14. $\left.\begin{aligned} a&=2^{\frac{2}{3}}+x \\ b&=x \end{aligned}\right\} \Rightarrow \mathbf{a^3-b^3-3ab(a-b)=?}$

A) 2 B) 4 C) 8 D) 16 E) 64

15. $x^2+y^2+z^2=65$

$2xy+2yz+2xz=35$

$\Rightarrow \mathbf{x+y+z=?}$

A) 6 B) 7 C) 8 D) 9 E) 10

16. $x, y \in R^+$, $x, y \in Z^+$

$16x^2-25y^2=23 \Rightarrow \mathbf{x=?}$

A) 3 B) 4 C) 5 D) 6 E) 7

Yanıtlar / Answers

1. D	**4. D**	**7. D**	**10. C**	**13. D**	**16. A**
2. E	**5. C**	**8. D**	**11. C**	**14. B**	
3. E	**6. A**	**9. C**	**12. B**	**15. E**	

1. $x, y \in Z^+$,

$x^2 - y^2 = 11 \Rightarrow \mathbf{x = ?}$

A) 3 B) 4 C) 5 D) 6 E) 7

2. $\left.\begin{array}{r} 4^{2a} - 4^{2b} = 16 \\ 4^a + 4^b = 8 \end{array}\right\} \Rightarrow \mathbf{4^a - 4^b = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\left.\begin{array}{l} a + b = 6 \\ a \cdot b = 12 \end{array}\right\} \Rightarrow \mathbf{a^2 + b^2 = ?}$

A) 3 B) 6 C) 9 D) 12 E) 18

4. $\left.\begin{array}{r} 3a - 2b = 8 \\ a \cdot b = 5 \end{array}\right\} \Rightarrow \mathbf{9a^2 + 4b^2 = ?}$

A) 120 B) 124 C) 126 D) 128 E) 130

5. $\left.\begin{array}{r} x + y = 5 \\ x \cdot y = 2 \end{array}\right\} \Rightarrow \mathbf{x^4 + y^4 = ?}$

A) 407 B) 410 C) 417 D) 425 E) 433

6. $x - \frac{1}{x} = 4 \Rightarrow \mathbf{x^2 + \frac{1}{x^2} = ?}$

A) 4 B) 8 C) 12 D) 14 E) 18

7. $x > y$

$\left.\begin{array}{r} x + y = 6 \\ x \cdot y = 4 \end{array}\right\} \Rightarrow \mathbf{|x - y| = ?}$

A) 2 B) $2\sqrt{3}$ C) 4 D) $2\sqrt{5}$ E) 5

8. $\left.\begin{array}{r} a - 2b + c = 16 \\ a^2 + 4b^2 + c^2 = 180 \end{array}\right\} \Rightarrow \mathbf{ac - 2ab - 2bc = ?}$

A) 38 B) 36 C) 24 D) 12 E) 8

9. $x + \frac{1}{x} = 4 \Rightarrow \frac{x^4 + 1}{x^2} = ?$

A) 10 B) 12 C) 14
D) 16 E) 18

10. $x^2 - 4x + 1 = 0 \Rightarrow x^2 + \frac{1}{x^2} = ?$

A) 8 B) 10 C) 12
D) 14 E) 16

11. $\left.\begin{aligned} a + 2b &= 6 \\ a \cdot b &= 2 \end{aligned}\right\} \Rightarrow a^3 + 8b^3 = ?$

A) 180 B) 154 C) 152
D) 144 E) 120

12. $\left.\begin{aligned} a + b &= 10 \\ a \cdot b &= 4 \end{aligned}\right\} \Rightarrow a^3 + b^3 = ?$

A) 880 B) 860 C) 840
D) 820 E) 800

13. $\left.\begin{aligned} a^3 - b^3 &= 45 \\ a^2 + ab + b^2 &= 15 \end{aligned}\right\} \Rightarrow a - b = ?$

A) 1 B) 2 C) 3
D) 4 E) 5

14. $\left.\begin{aligned} a^6 - b^6 &= 57 \\ a^4 + a^2b^2 + b^4 &= 19 \end{aligned}\right\} \Rightarrow a^2 - b^2 = ?$

A) 3 B) 5 C) 7
D) 9 E) 11

15. $\left.\begin{aligned} a^2(a + 3b) &= 48 \\ b^2(b + 3a) &= 16 \end{aligned}\right\} \Rightarrow a + b = ?$

A) 4 B) 5 C) 6
D) 7 E) 8

16. $\left.\begin{aligned} a^2(a - 3b) &= 25 \\ b^2(3a - b) &= 39 \end{aligned}\right\} \Rightarrow a - b = ?$

A) 3 B) 4 C) 5
D) 6 E) 7

Yanıtlar / Answers

1. D	4. B	7. D	10. D	13. C	16. B
2. B	5. E	8. A	11. D	14. A	
3. D	6. E	9. C	12. A	15. A	

1. $\left.\begin{matrix} a-b=4 \\ a\cdot b=7 \end{matrix}\right\} \Rightarrow \mathbf{a^2+b^2=?}$

A) 10 B) 20 C) 30 D) 40 E) 50

2. $\left.\begin{matrix} a+b=8 \\ a\cdot b=5 \end{matrix}\right\} \Rightarrow \mathbf{a^2+b^2=?}$

A) 50 B) 51 C) 52 D) 53 E) 54

3. $\left.\begin{matrix} a+b=12 \\ a\cdot b=11 \end{matrix}\right\} \Rightarrow |\mathbf{a-b}|=?$

A) 10 B) 11 C) 12 D) 13 E) 14

4. $\left.\begin{matrix} a^2+ab=7 \\ ab+b^2=2 \end{matrix}\right\} \Rightarrow \mathbf{|a+b|=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $\left.\begin{matrix} b\cdot(b-a)=70 \\ a\cdot(a-b)=30 \end{matrix}\right\} \Rightarrow \mathbf{|a-b|=?}$

A) 7 B) 8 C) 9 D) 10 E) 11

6. $\left.\begin{matrix} x^3+y^3=12 \\ x\cdot y=2 \end{matrix}\right\} \Rightarrow \mathbf{x^6+y^6=?}$

A) 100 B) 110 C) 120 D) 124 E) 128

7. $x, y \in R^+$

$4x^2 - 9y^2 = 13 \Rightarrow \mathbf{x = ?}$

A) $\frac{7}{2}$ B) $\frac{7}{3}$ C) $\frac{7}{4}$ D) $\frac{7}{5}$ E) $\frac{7}{6}$

8. $x+\frac{1}{x}=9 \Rightarrow \mathbf{\frac{x^4+1}{x^2}=?}$

A) 75 B) 76 C) 77 D) 78 E) 79

9. $a \cdot b = 10,\ \dfrac{1}{a} - \dfrac{1}{b} = \dfrac{7}{10} \Rightarrow \mathbf{a^2 + b^2 = ?}$

A) 65 B) 66 C) 67 D) 68 E) 69

10. $x^2 - 5x - 3 = 0 \Rightarrow \mathbf{x^2 + \dfrac{9}{x^2} = ?}$

A) 30 B) 31 C) 32 D) 33 E) 34

11. $\left.\begin{matrix} x = 4{,}691 \\ y = 1{,}309 \end{matrix}\right\} \Rightarrow \mathbf{x^3 + 3x^2y + 3xy^2 + y^3 = ?}$

A) 6 B) 36 C) 72 D) 144 E) 216

12. $\left.\begin{matrix} a + b = 4 \\ a \cdot b = 3 \end{matrix}\right\} \Rightarrow \mathbf{a^3 + b^3 = ?}$

A) 26 B) 27 C) 28 D) 29 E) 30

13. $\left.\begin{matrix} a - b = 5 \\ a^2 + ab + b^2 = 4 \end{matrix}\right\} \Rightarrow \mathbf{a^3 - b^3 = ?}$

A) 20 B) 21 C) 22 D) 23 E) 24

14. $\left.\begin{matrix} x = \sqrt[3]{5} + 4 \\ y = 4 \end{matrix}\right\} \Rightarrow \mathbf{x^3 - 3x^2y + 3xy^2 - y^3 = ?}$

A) 1 B) 2 C) 3 D)4 E) 5

15. $\left.\begin{matrix} a^2 + 2ac = 44 \\ b^2 + 2bc = 17 \\ c^2 + 2ab = 20 \end{matrix}\right\} \Rightarrow \mathbf{a + b + c = ?}$

A) 5 B) 6 C) 7 D) 8 E) 9

16. $(x - y + 8)^2 + (x + y - 16)^2 = 0 \Rightarrow \mathbf{\dfrac{x}{y} = ?}$

A) $\dfrac{1}{6}$ B) $\dfrac{1}{5}$ C) $\dfrac{1}{4}$ D) $\dfrac{1}{3}$ E) $\dfrac{1}{2}$

Yanıtlar / Answers

1. C	**4. C**	**7. A**	**10. B**	**13. A**	**16. D**
2. E	**5. D**	**8. E**	**11. E**	**14. E**	
3. A	**6. E**	**9. E**	**12. C**	**15. E**	

1. $\left(\frac{x+2}{2-x}\right):\left(1+\frac{4}{x-2}\right)=?$

A) -1 B) 0 C) 1

D) 2 E) 3

2. $\frac{a}{a+b}+\frac{b}{a-b}-1=?$

A) $\frac{2b^2}{a^2-b^2}$ B) $\frac{2a^2}{a^2-b^2}$ C) $\frac{a^2}{a^2-b^2}$

D) $\frac{b^2}{a^2-b^2}$ E) $\frac{1}{a^2-b^2}$

3. $\frac{mx^2-mx}{x^2-1}\cdot\frac{x^2+2x+1}{mx+m}=?$

A) m B) x C) $x-1$

D) $x+1$ E) mx

4. $\frac{(2a^2-2b^2)\cdot(4a^2+12ab+9b^2)}{(a+b)\cdot(2a+3b)\cdot(4a+6b)}=?$

A) $\frac{1}{a+b}$ B) $\frac{1}{a-b}$ C) $a+b$

D) $a-b$ E) $2a-b$

5. $\frac{x+4}{x-4}:\frac{x^2-16}{x^2-8x+16}=?$

A) $x+4$ B) $x-4$ C) $\frac{1}{x-4}$

D) $\frac{1}{x+4}$ E) 1

6. $\frac{a^2b-b^2a}{a^2-b^2}-\frac{2a}{a+b}=?$

A) $ab+2a$ B) $ab-2a$ C) $\frac{ab+2a}{a+b}$

D) $\frac{ab-2a}{a+b}$ E) $\frac{a+b}{ab+2a}$

7. $\left(1-\frac{1}{x}\right):\left(\frac{1-\frac{1}{x^2}}{1+\frac{1}{x}}\right)=?$

A) -1 B) $\frac{x+1}{x}$ C) 1

D) $\frac{x-1}{x}$ E) $\frac{x}{x-1}$

8. $\frac{2a^2+4a}{3a-2}\cdot\frac{3a^2+a-2}{a^2+3a+2}=?$

A) $\frac{2a}{a-2}$ B) $2a$ C) $\frac{2a}{a+2}$

D) $-2a$ E) $\frac{2a}{3a-2}$

9. $\dfrac{a^3b-2a^2b^2+ab^3}{ba^3-ab^3}=?$

A) $\dfrac{a-b}{a+b}$ B) $\dfrac{a+b}{a-b}$ C) $a+b$

D) $a-b$ E) $\dfrac{1}{a+b}$

10. $\left(\dfrac{x}{y}+\dfrac{y}{x}-2\right):\left(\dfrac{x-y}{xy}\right)=?$

A) $x-y$ B) $y-x$ C) $x+y$

D) $\dfrac{x}{y}$ E) $\dfrac{y}{x}$

11. $\dfrac{x^2+8}{x^3-8}+\dfrac{2}{x^2+2x+4}=?$

A) $\dfrac{1}{x^2+2x+4}$ B) $\dfrac{1}{x-2}$ C) $x+2$

D) $\dfrac{1}{x+2}$ E) $x-2$

12. $\left(\dfrac{2a^2+5a-3}{9-a^2}\right)\cdot\left(\dfrac{4a^2-1}{a^2-6a+9}\right)^{-1}=?$

A) $\dfrac{1}{3a-1}$ B) $\dfrac{2a+1}{a-3}$ C) $\dfrac{3+a}{2a+1}$

D) $\dfrac{3-a}{2a+1}$ E) 1

13. $\dfrac{a^2}{a+\dfrac{1}{1-\dfrac{1}{a}}}=?$

A) a B) a + 1 C) a – 1

D) a^2 E) 1

14. $\dfrac{4a^3b-24a^2b+36ab}{8a^2b^2-72b^2}=?$

A) $\dfrac{a(a-3)}{2a+3}$ B) $\dfrac{a-3}{a+2}$ C) $\dfrac{a+3}{a-3}$

D) $\dfrac{a(a-3)}{a+b}$ E) $\dfrac{a(a-3)}{2ab+6b}$

15. $\dfrac{x^2-xy}{x^3+y^3}:\dfrac{x-y}{x^3-x^2y+xy^2}=?$

A) $\dfrac{x}{x^2+y^2}$ B) $\dfrac{2xy}{x+y}$ C) $\dfrac{x^2}{6(x+y)}$

D) $\dfrac{y}{x+y}$ E) $\dfrac{x^2}{x+y}$

16. $\dfrac{2+\dfrac{3}{x}}{4-\dfrac{9}{x^2}}\cdot(2x-3)=?$

A) 1 B) $\dfrac{1}{x}$ C) x

D) $2x-3$ E) $\dfrac{2x-3}{x}$

Yanıtlar / Answers

1. A	**4. D**	**7. C**	**10. A**	**13. C**	**16. C**
2. A	**5. E**	**8. B**	**11. B**	**14. E**	
3. B	**6. D**	**9. A**	**12. D**	**15. E**	

1. $\left(a+\dfrac{1}{a+b}\right)\cdot\left(\dfrac{a+b}{a(a+b)+1}\right)=?$

A) 0 B) 1 C) 2 D) 3 E) 4

2. $\left(\dfrac{a^3+a^2b+b^2a}{a^2-ab+b^2}:\dfrac{a^3-b^3}{a^3+b^3}\right)\cdot\dfrac{a-b}{a+b}=?$

A) 1 B) a C) a + 1

D) a + b E) a – b

3. $\dfrac{9x^2-81}{3x-9}\cdot\dfrac{3}{x+3}=?$

A) 1 B) 3 C) 6 D) 9 E) 12

4. $\dfrac{m^2-n^2}{2m+2n}:\dfrac{4m^2-8mn+4n^2}{8(m+n)}=?$

A) 1 B) m+n C) m−n

D) $\dfrac{m-n}{m+n}$ E) $\dfrac{m+n}{m-n}$

5. $\dfrac{(x-y)^2-(x+y)^2}{xy^2-x^2y}\cdot\dfrac{x-y}{4}=?$

A) –2 B) –1 C) 0 D) 1 E) 2

6. $\dfrac{1-\dfrac{1}{x}}{1+\dfrac{1}{x}}-\dfrac{-2}{x+1}+1=?$

A) –2 B) –1 C) 0 D) 1 E) 2

7. $\dfrac{a^3b^2+a^2b^3}{a^2b-ab^2}\cdot\dfrac{a-b}{ab}=?$

A) a B) ab C) a – b

D) a + b E) 2

8. $\dfrac{1-\dfrac{1}{x^2}}{\dfrac{1+x}{x}}:\dfrac{1-x}{x}=?$

A) –2 B) –1 C) 0 D) 1 E) 2

9. $\left(\dfrac{a}{a-b}-\dfrac{b}{a+b}\right)\cdot\left(\dfrac{a^2-b^2}{a^2+b^2}\right)=?$

A) –1　　B) 1　　C) a　　D) –a　　E) a – b

10. $\dfrac{x^2-16}{4x-16}\cdot\dfrac{8x}{2x+8}=?$

A) 1　　B) 2　　C) x　　D) x – 1　　E) x + 1

11. $\dfrac{2a^2+3a+1}{2a^2+a}\cdot\dfrac{a^2-a}{a-1}=?$

A) 1　　B) 2　　C) a　　D) a – 1　　E) a + 1

12. $x^2 + y^2 + 6y - 4x + 13 = 0$

⇒ x + y = ?

A) –2　　B) –1　　C) 1　　D) 2　　E) 4

13. $(x + y - 24)^6 + (x - y + 10)^4 = 0$

⇒ x·y = ?

A) 24　　B) 45　　C) 76　　D) 98　　E) 119

14. $\dfrac{x^2+xy^2}{xy+y^3}:\dfrac{x}{y}=?$

A) 1　　B) 2　　C) 3　　D) x　　E) $\dfrac{1}{y}$

15. $\dfrac{2x^2+xy-y^2}{x^2-y^2}\cdot\dfrac{x-y}{4x-2y}=?$

A) $\dfrac{1}{4}$　　B) $\dfrac{1}{2}$　　C) 1　　D) $x-y$　　E) $x+y$

16. $\dfrac{x^4-x^3+x^2-x}{x^5-x^4+x^3-x^2}=?$

A) 1　　B) $x+1$　　C) $\dfrac{1}{x+1}$　　D) $\dfrac{1}{x}$　　E) $\dfrac{1}{x+1}$

Yanıtlar / Answers

1. B	4. E	7. D	10. C	13. E	16. D
2. B	5. D	8. B	11. E	14. A	
3. D	6. E	9. B	12. B	15. B	

1. $\sqrt{a}+\dfrac{1}{\sqrt{a}}=\sqrt{7} \Rightarrow a^2+\dfrac{1}{a^2}=?$

A) 18 B) 19 C) 21
D) 23 E) 25

2. $a-3b=m \Rightarrow a^2+9b^2-1-6ab=?$

A) $m+2$ B) m^2+2 C) m^2-1
D) m^2 E) m^2-2

3. $\dfrac{\dfrac{9}{a^2}-1}{1-\dfrac{3}{a}}+\dfrac{3}{a}=?$

A) $\dfrac{3}{a}$ B) a C) – 1
D) 1 E) –a

4. $\dfrac{a^2b^2-1}{a(b^2+1)+b(a^2+1)}=?$

A) $\dfrac{ab-1}{a+b}$ B) $\dfrac{a+b+1}{a+b}$ C) $\dfrac{ab-1}{ab}$
D) $\dfrac{ab+1}{ab}$ E) $\dfrac{a}{b}$

5. $\dfrac{(a^2+ab)^2}{(a^2-ab)^2}\cdot\left(\dfrac{a^2-2ab+b^2}{a^2+2ab+b^2}\right)=?$

A) $\dfrac{a}{b}$ B) ab C) b
D) a E) 1

6. $\dfrac{x^3-y^3}{x^2-y^2}-(x+y)=?$

A) $\dfrac{-xy}{x+y}$ B) $\dfrac{x+2y}{x-y}$ C) $\dfrac{y(x+2y)}{x}$
D) $\dfrac{y(x+2y)}{x-y}$ E) $\dfrac{x+y}{y}$

7. $x+y=2 \Rightarrow x^2+y^2+x^2y+xy^2=?$

A) 0 B) 2 C) 4
D) 6 E) 8

8. $\dfrac{a}{b}+\dfrac{b}{a}=2 \Rightarrow \dfrac{a^4+b^4}{2a^2b^2}=?$

A) 1 B) 2 C) 3
D) 4 E) 5

9. $\dfrac{\mathbf{x^4+4}}{\mathbf{(x^2-2x+2)\cdot(3x^2+6x+6)}}=\mathbf{?}$

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$

D) $\frac{1}{5}$ E) $\frac{1}{6}$

10. $a^3-1=m \Rightarrow \mathbf{a^6-1=?}$

A) m^2 B) m^2+2 C) m^2+m

D) m^2+2m E) m^2+3m

11. $x^2-x+1=0 \Rightarrow \mathbf{x^3+\dfrac{1}{x^3}=?}$

A) 5 B) 3 C) –1

D) –2 E) –4

12. $a=2,\ b=3 \Rightarrow$

$\mathbf{\dfrac{a^2+a+1}{a^3-1}+\dfrac{ab^2-a^2b}{b^2-a^2}\cdot(b+a)=?}$

A) 4 B) 5 C) 6

D) 7 E) 8

13. $x+y=3 \Rightarrow \mathbf{\dfrac{x^2-y^2+6x+9}{x^2-y^2+3x+3y}=?}$

A) 2 B) 3 C) 4

D) 5 E) 6

14. $\mathbf{\dfrac{a}{a+1}+\dfrac{a}{a-1}-2=?}$

A) $\dfrac{4}{a^2-1}$ B) $\dfrac{2}{a^2-1}$ C) $\dfrac{-2}{a^2+1}$

D) $\dfrac{4a^2+2}{a^2+1}$ E) 2

15. $\mathbf{99999\cdot100001=?}$

A) 10^{10} B) 10^5 C) 10^5+1

D) $10^{10}-1$ E) 1

16. $a, b \in N^+$,

$a^2-9b^2=7 \Rightarrow \mathbf{a^3-3a^2b+3ab^2-b^3=?}$

A) 3 B) 9 C) 27

D) 64 E) 125

Yanıtlar / Answers

1. D	**4. A**	**7. C**	**10. D**	**13. A**	**16. C**
2. C	**5. E**	**8. A**	**11. D**	**14. B**	
3. C	**6. A**	**9. B**	**12. D**	**15. D**	

1. $2x - 3y = m$

$\Rightarrow \mathbf{4x^2 - 12xy + 9y^2 + 2x - 3y = ?}$

A) m B) m^2 C) $m^2 + m$

D) $m^2 + 1$ E) $m^2 + 3m$

2. $\frac{a}{b} + \frac{b}{a} = 6 \Rightarrow \frac{\mathbf{a^2 + b^2}}{\mathbf{3ab}} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\frac{\frac{4}{x^2} - 1}{1 - \frac{2}{x}} - \left(1 - \frac{2}{x}\right) = ?$

A) −2 B) −1 C) 0 D) 1 E) 2

4. $a + b = m \Rightarrow \mathbf{(a - b)^2 + 4ab = ?}$

A) 1 B) m C) $\frac{1}{m}$ D) m^2 E) $\frac{m}{2}$

5. $x^2 - 3x + 1 = 0 \Rightarrow \mathbf{x^3 + \frac{1}{x^3} = ?}$

A) 15 B) 16 C) 17 D) 18 E) 19

6. $a^2 + 1 = m \Rightarrow \mathbf{a^4 - 1 = ?}$

A) m B) m^2 C) $2m^2$

D) $m^2 + 1$ E) $m^2 - 2m$

7. $x - y = 4 \Rightarrow \frac{\mathbf{x^2 - y^2 + 4x - 4y}}{\mathbf{2x + 2y + 8}} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

8. $\left.\begin{array}{l} 2a - 5b = 7 \\ x + y = 4 \end{array}\right\} \Rightarrow \mathbf{2ax - 5by + 2ay - 5bx = ?}$

A) 20 B) 24 C) 28 D) 32 E) 36

9. $x + y = 5,$

$x^3 - y^3 = 4x^2 + 4xy + 4y^2 \Rightarrow x^2 - y^2 = ?$

A) 16 B) 17 C) 18 D) 19 E) 20

10. $\left(\frac{\frac{a}{b}}{\frac{1}{c}} - \frac{\frac{c}{b}}{\frac{1}{a}}\right) \cdot \left(\frac{\frac{a}{c}}{\frac{1}{b}}\right) = ?$

A) 0 B) 1 C) $\frac{1}{a}$ D) $\frac{b}{c}$ E) $\frac{a}{b}$

11. $x^2 + (a + 1)x + a = (x + 1)(x + 4)$

$\Rightarrow \mathbf{a = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

12. $\left(\frac{1}{a+1} + \frac{1}{a-1}\right) \cdot \left(\frac{a^2-1}{a}\right) = ?$

A) –2 B) –1 C) 0 D) 1 E) 2

13. $x, y \in \mathbb{N},$

$$\left.\begin{aligned} x^2 + a &= 18 \\ y^2 + a &= 1 \end{aligned}\right\} \Rightarrow \mathbf{x \cdot y = ?}$$

A) 69 B) 70 C) 71 D) 72 E) 73

14. $$\left.\begin{aligned} m \cdot a + m \cdot b &= 8 \\ n \cdot a + n \cdot b &= 14 \\ a + b &= 11 \end{aligned}\right\} \Rightarrow \mathbf{m + n = ?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $x^3 - 2x + 4 = 0 \Rightarrow \mathbf{x^2 + \frac{4}{x} = ?}$

A) 5 B) 4 C) 3 D) 2 E) 1

16. $\frac{0{,}001 \cdot 10^{-5} + 0{,}01 \cdot 10^{-7}}{10^{-10} + 10^{-9}} = \frac{5k}{11} \Rightarrow \mathbf{k = ?}$

A) 16 B) 22 C) 35 D) 43 E) 51

Yanıtlar / Answers

1. C	**4. D**	**7. B**	**10. A**	**13. D**	**16. B**
2. B	**5. D**	**8. C**	**11. D**	**14. B**	
3. A	**6. E**	**9. E**	**12. E**	**15. D**	

$\left.\begin{matrix} x-y=6 \\ x\cdot y=7 \end{matrix}\right\} \Rightarrow \dfrac{1}{x^2}+\dfrac{1}{y^2}=?$

A) $\dfrac{5}{7}$ B) $\dfrac{50}{49}$ C) 36

D) 20 E) 16

2. $\dfrac{1-\dfrac{1}{a}}{1+\dfrac{1}{a}} : \dfrac{a-1}{a-\dfrac{1}{a}} = ?$

A) $a-1$ B) $\dfrac{a-1}{a}$ C) $\dfrac{1}{a}$

D) $a+1$ E) a^2-1

3. $a^2+\dfrac{4}{a^2}=m \Rightarrow \left(a-\dfrac{2}{a}\right)^2=?$

A) 4m B) 2m C) m + 2

D) m + 4 E) m − 4

4. a + b + c = 1,

$\dfrac{1}{a}+\dfrac{1}{b}+\dfrac{1}{c}=0 \Rightarrow a^2+b^2+c^2=?$

A) 4 B) 3 C) 2

D) 1 E) 0

5. $\left(\dfrac{x}{y-x}+\dfrac{y}{x+y}\right):\left(\dfrac{y^3+yx^2}{y^2x-x^3}\right)=?$

A) x B) $\dfrac{x}{y}$ C) y

D) $\dfrac{y}{x}$ E) xy

6. $\left(\dfrac{x+2}{x-2}-\dfrac{x-2}{x+2}\right):\dfrac{x}{x^2+x-6}=?$

A) $\dfrac{8(x+3)}{x+2}$ B) $\dfrac{2}{x+3}$ C) $\dfrac{x^2+3x}{x+2}$

D) $\dfrac{1}{x^2+5x+6}$ E) $\dfrac{x+3}{x^2+2x}$

7. $y>0$,

$\dfrac{3x^2-3xy+y^2}{y^2}=7 \Rightarrow \max(x)=?$

A) $\dfrac{y}{2}$ B) $\dfrac{3y}{4}$ C) y

D) $\dfrac{3y}{2}$ E) 2y

8. $m \neq n$,

$\dfrac{1+\dfrac{m}{x}}{\dfrac{n}{x}-1}=\dfrac{n}{m} \Rightarrow x=?$

A) n − m B) −m C) −n

D) 1 E) 0

9. $\left.\begin{array}{r} x^2-y^2=12 \\ y^2-z^2=4 \\ x-z=2 \end{array}\right\} \Rightarrow \mathbf{(x-z)^2+4xz=?}$

A) 4 B) 16 C) 32 D) 64 E) 144

10. $\left(\dfrac{\mathbf{a^{3x}-1}}{\mathbf{a^x-1}}-\dfrac{\mathbf{a^{3x}+1}}{\mathbf{a^x+1}}-\dfrac{\mathbf{a^{2x}-1}}{\mathbf{a^x+1}}\right)=?$

A) a^{x+1} B) a^x+1 C) $(a^x+1)^2$ D) $\dfrac{1}{a^x+1}$ E) $a^x+\dfrac{1}{a^x}$

11. $\dfrac{\mathbf{a^2+a-5}}{\mathbf{a-7}}+\dfrac{\mathbf{8-4a}}{\mathbf{a^2-9a+14}}-\dfrac{\mathbf{a^2-2}}{\mathbf{a-7}}=?$

A) $\dfrac{1}{a+1}$ B) $\dfrac{1}{a+2}$ C) $a-1$ D) $a+1$ E) 1

12. $\dfrac{\mathbf{(x^4-1)\cdot(x^4-x^2+1)}}{\mathbf{x^6+1}}=?$

A) x^2+1 B) x^4-x^2+1 C) x^2-1 D) $x-1$ E) $x+1$

13. $\left(\dfrac{\mathbf{x^2-y^2}}{\mathbf{2x+2y-x^2+y^2}}-\dfrac{\mathbf{2}}{\mathbf{2+y-x}}\right)=?$

A) $-\dfrac{2x}{x+y}$ B) $-x$ C) x D) -1 E) 1

14. $\left.\begin{array}{l} x=3{,}25 \\ y=2{,}75 \end{array}\right\} \Rightarrow \dfrac{\mathbf{(x-y)^2+4xy}}{\mathbf{2(x+y)}}=?$

A) 1 B) $\dfrac{3}{2}$ C) 2 D) $\dfrac{5}{2}$ E) 3

15. $\dfrac{\mathbf{x}}{\mathbf{x+1}}-\dfrac{\mathbf{1-x}}{\mathbf{x^2-1}}=?$

A) 2 B) 1 C) 0 D) –1 E) –2

16. $\dfrac{a^2+a}{a+1}+\dfrac{a^2-4a+4}{a-2}=-6 \Rightarrow \mathbf{a=?}$

A) -2 B) -1 C) $-\dfrac{1}{2}$ D) $-\dfrac{1}{3}$ E) $-\dfrac{1}{4}$

Yanıtlar / Answers

1. B	**4. D**	**7. E**	**10. B**	**13. D**	**16. A**
2. B	**5. B**	**8. A**	**11. E**	**14. E**	
3. E	**6. A**	**9. D**	**12. C**	**15. B**	

1. $A = m^2 - 6m + 10$

$\Rightarrow$ **min(A) = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

2. $\dfrac{(3a-2b)^2-(3a+2b)^2}{(a+b)^2-(a-b)^2} = \textbf{?}$

A) –5 B) –6 C) –7 D) –8 E) –9

3. $\dfrac{mn+mk+pn+pk}{2n+2k} = 6, \quad m-p=6 \Rightarrow \mathbf{m = ?}$

A) 6 B) 7 C) 8 D) 9 E) 10

4. $\dfrac{x^2-(a+2)x+2a}{x^2-a^2} = 1 \Rightarrow \mathbf{a = ?}$

A) –2 B) –1 C) 0 D) 1 E) 2

5. $\dfrac{x+y}{xy} = \dfrac{1}{x-y} \Rightarrow \mathbf{x^2-y^2-xy = ?}$

A) –2 B) –1 C) 0 D) 1 E) 2

6. $\dfrac{\mathbf{x^2-2x-8}}{\mathbf{x^2+4x+4}} \cdot \dfrac{\mathbf{x^2-5x+6}}{\mathbf{x^2-7x+12}} = \textbf{?}$

A) 1 B) $x+2$ C) $x-2$

D) $\dfrac{x+2}{x-2}$ E) $\dfrac{x-2}{x+2}$

7. **$(6{,}102 + 2{,}102)^2 - 4(6{,}102 \cdot 2{,}102) = ?$**

A) 1 B) 2 C) 4 D) 16 E) 32

8. $\left.\begin{array}{l} 2a-b=8 \\ x-2y=4 \end{array}\right\} \Rightarrow \mathbf{2ax-4ay-bx+2by-2 = ?}$

A) 30 B) 31 C) 32 D) 33 E) 34

9. $a = 2001 \Rightarrow \mathbf{a^2 - 2a = ?}$

A) 10^3 B) 10^6 C) $10^6 - 1$

D) $2 \cdot 10^6$ E) $4 \cdot 10^6 - 1$

10. $\dfrac{x^6 - y^6}{x^2 - y^2} \cdot \dfrac{1}{x^2 - xy + y^2} : (x^2 + xy + y^2) = ?$

A) 1 B) $x - y$ C) $x + y$

D) $x^2 - xy + y^2$ E) $x^2 - y^2$

11. $\left(\dfrac{a^2}{4} - \dfrac{ab}{2} + \dfrac{b^2}{4}\right) \cdot \left(\dfrac{16}{a^2 - b^2}\right) = ?$

A) 1 B) 2 C) 4

D) $\dfrac{4}{a-b}$ E) $\dfrac{4(a-b)}{a+b}$

12. $x + \dfrac{1}{x+1} = 6 \Rightarrow (x+1)^2 + \dfrac{1}{(x+1)^2} = ?$

A) 40 B) 44 C) 47 D) 49 E) 54

13. $\left.\begin{array}{l} x = \sqrt{2} - 1 \\ y = \sqrt{2} + 1 \end{array}\right\} \Rightarrow \dfrac{(x-y)^2 + 4xy}{x - y} = ?$

A) −4 B) −2 C) 0 D) 2 E) 4

14. $\left.\begin{array}{l} a^2 + ab = 16 \\ ab - b^2 = 10 \end{array}\right\} \Rightarrow \mathbf{a^2 + b^2 = ?}$

A) 4 B) 5 C) 6 D) 7 E) 8

15. $x^2 + y^2 - 8x + 6y + 25 = 0$

$\Rightarrow \mathbf{x \cdot y = ?}$

A) 12 B) 8 C) 4 D) −8 E) −12

16. $a + b + c + a \cdot b \cdot c = a \cdot b + a \cdot c + b \cdot c$

$\mathbf{(a - 1) \cdot (b - 1) \cdot (c - 1) = ?}$

A) 3 B) 1 C) 0 D) −1 E) −2

[SÜLEYMAN DEMİREL ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. D	**4. A**	**7. D**	**10. A**	**13. A**	**16. D**
2. B	**5. C**	**8. A**	**11. E**	**14. C**	
3. D	**6. E**	**9. E**	**12. C**	**15. E**	

1. $x^2 = x + 1 \Rightarrow \dfrac{x^3+3}{x^2+1} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

2. $\left(\dfrac{a+2}{2-a} - 1\right) \cdot \left(1 - \dfrac{4}{a^2}\right) = ?$

A) $\dfrac{a+2}{a}$ B) $\dfrac{a-1}{a}$ C) $\dfrac{2a-2}{a}$

D) $\dfrac{-2a-4}{a}$ E) $\dfrac{2a-4}{a}$

3. $a^2 = a + 1 \Rightarrow \mathbf{a^5 + 2a = ?}$

A) a + 1 B) 3a + 2 C) 6a + 5

D) 7a + 3 E) 9a + 1

4. $\dfrac{a}{a-1} - \dfrac{a}{1-\dfrac{1}{a}} = ?$

A) –2a B) –a C) a D) 2a E) 3a

5. $2^{\frac{1}{6}} + 1 = a \Rightarrow \dfrac{(2^{\frac{1}{12}} - 1) \cdot (2^{\frac{1}{12}} + 1)}{2^{\frac{1}{3}} - 1} = ?$

A) $-a$ B) $-\dfrac{1}{a}$ C) 1

D) $\dfrac{1}{a}$ E) a

6. $\dfrac{a^{12}-1}{a^8 + a^4 + 1} = ?$

A) a^2 B) $a^3 - 1$ C) a^4

D) $a^4 - 1$ E) $a^3 + 1$

7. $\dfrac{x^2 - 2x + a}{x^2 + 2x + b} = \dfrac{x-5}{x-1} \Rightarrow a + b = ?$

A) –18 B) –10 C) 0 D) 10 E) 8

8. $\dfrac{2789^3 - 1}{2789^2 + 2789 + 1} = ?$

A) 1789 B) 2780 C) 2788

D) 2789 E) 2790

9. $16x^2 + 9y^2 - 40x + 12y + 29 = 0$

$\Rightarrow \mathbf{4x - 6y = ?}$

A) 1 B) 3 C) 5 D) 7 E) 9

10. $x - \frac{1}{x} = 6 \Rightarrow \frac{x^6 - 1}{x^3} = ?$

A) 200 B) 210 C) 216

D) 227 E) 234

11. $a^2 + b^2 + 6a - 6b + 18 = 0$

$\Rightarrow \mathbf{b - a = ?}$

A) 2 B) 4 C) 6 D) 8 E) 10

12. $\frac{ab^2 - a^2b}{a^3b - 2a^2b^2 + ab^3} = ?$

A) $a - b$ B) $\frac{1}{a-b}$ C) $\frac{1}{b-a}$

D) $\frac{a^2}{b-a}$ E) $\frac{b^2}{a-b}$

13. $a - \frac{a+1}{\frac{1}{a}+1} = ?$

A) $-\infty$ B) 0 C) 1

D) a E) a + 1

14. $x - y = 3$

$x + z = 5$

$\Rightarrow \mathbf{x^2 - yz - xy + xz = ?}$

A) 2 B) 5 C) 7 D) 12 E) 15

15. $x, y \in Z$

$x^2 - y^2 - 2x + 1 = 13 \Rightarrow \mathbf{x \cdot y = ?}$

A) 4 B) 8 C) 26 D) 36 E) 48

16. $\left(\frac{x^3 + y^3}{x^3 - y^3} : \frac{x^2 - xy + y^2}{x - y}\right)\left(x^2 + xy + y^2\right) = ?$

A) x B) x^2 C) $x - y$

D) $x + y$ E) x^2y^2

[İSTANBUL ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. B	**4. B**	**7. A**	**10. E**	**13. B**	**16. D**
2. D	**5. D**	**8. C**	**11. C**	**14. E**	
3. D	**6. D**	**9. E**	**12. C**	**15. E**	

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $\frac{a+b}{b}=\frac{3}{4} \Rightarrow \frac{\mathbf{3a-b}}{\mathbf{b}}=?$

Yanıt / The answer is $-\frac{7}{4}$

2. $\frac{a+2b}{a-2b}=2 \Rightarrow \frac{\mathbf{a+b}}{\mathbf{b-a}}=?$

Yanıt / The answer is $-\frac{7}{5}$

3. $\frac{a-b}{b}=2 \Rightarrow \frac{\mathbf{a^2-ab}}{\mathbf{a^2+b^2}}=?$

Yanıt / The answer is $\frac{3}{5}$

4. $a:b:c=5:2:6 \Rightarrow \frac{\mathbf{3a-c}}{\mathbf{4c-6b}}=?$

Yanıt / The answer is $\frac{3}{4}$

5. $\frac{2x-y}{x+y}=\frac{3}{2} \Rightarrow \frac{\mathbf{x^2+xy+2y^2}}{\mathbf{x^2-y^2}}=?$

Yanıt / The answer is $\frac{4}{3}$

6. $\frac{x}{3}=\frac{y}{2} \Rightarrow \frac{\mathbf{3x+4y}}{\mathbf{x-y}}=?$

Yanıt / The answer is **17**

7. $x = \frac{y}{3} = \frac{z}{4} \Rightarrow \frac{\mathbf{2x - 3y + z}}{\mathbf{z - y - 2x}} = \mathbf{?}$

Yanıt / The answer is **3**

8. $x : y : z = 3 : \frac{1}{2} : 4 \Rightarrow \frac{\mathbf{x - 4y + z}}{\mathbf{x + 2y}} = \mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{5}}{\mathbf{4}}$

9. $\frac{2x - 3y}{x + y} = 1 \Rightarrow \frac{\mathbf{3x + y}}{\mathbf{x - y}} = \mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{13}}{\mathbf{3}}$

10. $\frac{a}{2} = \frac{b}{3} = \frac{c}{5} \Rightarrow \frac{\mathbf{2a - b + c}}{\mathbf{2a + b - c}} = \mathbf{?}$

Yanıt / The answer is **3**

11. $3a = 4b = 5c \Rightarrow \frac{\mathbf{a + 2b - c}}{\mathbf{2a}} = \mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{19}}{\mathbf{20}}$

12. $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = 5 \Rightarrow \frac{\mathbf{a + c + e}}{\mathbf{b + d + f}} = \mathbf{?}$

Yanıt / The answer is **5**

13. $\frac{x}{a}=\frac{y}{b}=2$

$\Rightarrow (\frac{\mathbf{x+a}}{\mathbf{y}})\cdot(\frac{\mathbf{2b-3y}}{\mathbf{x}})=?$

Yanıt / The answer is **−3**

14. $\left.\begin{aligned}\frac{y}{x}=\frac{2}{3}\\ \frac{z}{x}=\frac{3}{5}\end{aligned}\right\} \Rightarrow \frac{\mathbf{y}}{\mathbf{z-x}}=?$

Yanıt / The answer is $-\frac{5}{3}$

15. $\left.\begin{aligned}\frac{x+y}{x}=\frac{3}{2}\\ \frac{y-z}{z}=\frac{1}{2}\end{aligned}\right\} \Rightarrow \frac{\mathbf{x+3z}}{\mathbf{7z-2x}}=?$

Yanıt / The answer is **6**

16. $\left.\begin{aligned}a+\frac{1}{b}=1\\ b+\frac{1}{a}=2\end{aligned}\right\} \Rightarrow \frac{\mathbf{a}}{\mathbf{a+b}}=?$

Yanıt / The answer is $\frac{1}{3}$

17. $\left.\begin{aligned}\frac{a\cdot c}{b\cdot d}=\frac{1}{3}\\ \frac{c+d}{d}=\frac{4}{3}\end{aligned}\right\} \Rightarrow \frac{\mathbf{a+3b}}{\mathbf{2a-b}}=?$

Yanıt / The answer is **4**

18. $\left.\begin{aligned}x-\frac{3}{y}=5\\ y-\frac{3}{x}=4\end{aligned}\right\} \Rightarrow \frac{\mathbf{x+y}}{\mathbf{x-y}}=?$

Yanıt / The answer is **9**

19. $\frac{1}{2x}=\frac{3}{4y}=\frac{2}{3z} \Rightarrow \mathbf{x:y:z=?}$

Yanıt / The answer is **6 : 9 : 8**

---

20. $\left.\begin{array}{l}\frac{x}{y}=\frac{3}{4}\\[6pt]\frac{y}{z}=\frac{3}{5}\end{array}\right\} \Rightarrow \frac{\mathbf{x+y}}{\mathbf{y+z}}=\mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{21}}{\mathbf{32}}$

---

21. $\frac{x-y+z}{3}=\frac{x+y-z}{5}=\frac{y+z}{9} \Rightarrow \mathbf{x:y:z=?}$

Yanıt / The answer is **4 : 5 : 4**

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22. $\left.\begin{array}{l}\frac{a+b}{2}=c\\[6pt]\frac{2a-c}{b}=3\end{array}\right\} \Rightarrow \frac{\mathbf{a}}{\mathbf{b}}=\mathbf{?}$

Yanıt / The answer is $\frac{7}{3}$

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23. $\frac{a}{b}=\frac{c}{d}=k,\ \frac{2a-3c}{2b-xd}=k \Rightarrow \mathbf{x=?}$

Yanıt / The answer is 3

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24. $\frac{a}{b}=\frac{c}{d}=k,\ \frac{3a+5}{3b+xd}=k \Rightarrow \mathbf{x=?}$

Yanıt / The answer is $\frac{5}{c}$

1. $\frac{x}{y}=\frac{a}{b}=3 \Rightarrow \frac{\mathbf{x-y}}{\mathbf{x}}\cdot\frac{\mathbf{a+b}}{\mathbf{a}}=\mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{8}}{\mathbf{9}}$

2. $\frac{x-y}{x}=\frac{3y+z}{y}=\frac{x+z}{z} \Rightarrow \frac{\mathbf{3x-3y}}{\mathbf{z}}=\mathbf{?}$

Yanıt / The answer is **6**

3. $\frac{x}{y}=\frac{3}{4},\ \frac{y}{z}=\frac{4}{5} \Rightarrow \frac{\mathbf{2x+5y}}{\mathbf{3y-z}}=\mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{26}}{\mathbf{7}}$

4. $\frac{a}{b}=\frac{1}{4},\ \frac{b}{c}=\frac{2}{5} \Rightarrow \frac{\mathbf{3a-5b}}{\mathbf{a+b-2c}}=\mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{17}}{\mathbf{15}}$

5. $\frac{a}{b}=\frac{2}{3},\ \frac{b}{c}=\frac{1}{3} \Rightarrow \frac{\mathbf{a^2+b^2}}{\mathbf{b\cdot c}}=\mathbf{?}$

Yanıt / The answer is $\frac{\mathbf{13}}{\mathbf{27}}$

6. $\frac{\frac{1}{2}x+\frac{3}{4}y}{y-x}=\frac{1}{4} \Rightarrow \frac{\mathbf{x^2-3xy-4y^2}}{\mathbf{(x-4y)\cdot x}}=\mathbf{?}$

Yanıt / The answer is $-\frac{\mathbf{1}}{\mathbf{2}}$

7. $\dfrac{3x-y}{x+2y}=1,\ \dfrac{y+\dfrac{z}{4}}{2y-3z}=\dfrac{1}{4}\ \Rightarrow\ \dfrac{\mathbf{y-x}}{\mathbf{z}}=\mathbf{?}$

Yanıt / The answer is **1**

8. $\left.\begin{array}{l}\dfrac{a}{4}=\dfrac{b}{5}\\ 5a+4b=15\end{array}\right\}\Rightarrow \mathbf{b=?}$

Yanıt / The answer is $\mathbf{\dfrac{15}{8}}$

9. $\left.\begin{array}{l}\dfrac{a}{2}=\dfrac{b}{3}=\dfrac{c}{4}\\ 3a+2b=48\end{array}\right\}\Rightarrow \mathbf{c=?}$

Yanıt / The answer is **16**

10. $a:b:c=3:5:7$

$2a-b+c=72\Rightarrow \mathbf{b=?}$

Yanıt / The answer is **45**

11. $\left.\begin{array}{l}\dfrac{a}{2}=\dfrac{b}{3}=\dfrac{c}{5}\\ 2c-3a=52\end{array}\right\}\Rightarrow \mathbf{b=?}$

Yanıt / The answer is **39**

12. $\left.\begin{array}{l}\dfrac{a}{2}=\dfrac{b}{3}=\dfrac{c}{5}=k\\ 7a-b+mc=k\end{array}\right\}\Rightarrow \mathbf{m=?}$

Yanıt / The answer is **−2**

13. a, b $\in Z^+$,

$$\left.\begin{array}{l}\frac{a}{b}=\frac{2}{3}\\ a^2-b^2=-125\end{array}\right\}\Rightarrow \mathbf{a=?}$$

Yanıt / The answer is **10**

14. x, y, z $\in N^+$

$$\left.\begin{array}{l}\frac{x}{2}=\frac{y}{3}=\frac{z}{4}\\ x^2+2y^2-z^2=6\end{array}\right\}\Rightarrow \mathbf{y=?}$$

Yanıt / The answer is **3**

15. $$\left.\begin{array}{l}\frac{x}{3}=\frac{y}{2}=\frac{3z}{4}\\ 3x+y-3z=15\end{array}\right\}\Rightarrow \mathbf{z=?}$$

Yanıt / The answer is $\mathbf{\frac{20}{7}}$

16. $$\left.\begin{array}{l}\frac{x}{2}=\frac{2y}{3}=\frac{3z}{4}\\ 2x+2y-3z=21\end{array}\right\}\Rightarrow \mathbf{x+2y=?}$$

Yanıt / The answer is **35**

17. $\frac{x}{y}=2$, $\frac{y}{z}=\frac{3}{2}$

$x+z=16$

$\Rightarrow \mathbf{x+y-z=?}$

Yanıt / The answer is **14**

18. $$\left.\begin{array}{l}\frac{a}{3}=\frac{b}{2}\\ 2a+c-3b=7\end{array}\right\}\Rightarrow \mathbf{c=?}$$

Yanıt / The answer is **7**

19. $\frac{x}{2}=\frac{y}{3}$ ve (and) $\frac{y}{z}=\frac{4}{5}$,

$x+y+z=70 \Rightarrow \mathbf{z=?}$

Yanıt / The answer is **30**

20. $\left.\begin{array}{l} x:y:z=4:5:8 \\ \frac{x}{2}-y+z=15 \end{array}\right\} \Rightarrow \mathbf{\frac{x+z}{2}=?}$

Yanıt / The answer is **18**

21. $\left.\begin{array}{l} \frac{a+3}{2}=\frac{b-3}{3}=\frac{c}{5} \\ 5a+2b-c=24 \end{array}\right\} \Rightarrow \mathbf{a=?}$

Yanıt / The answer is **3**

22. $\frac{x+y}{y}=\frac{7}{6}$, $\frac{y+z}{z}=\frac{9}{4}$,

$3x-4y+z=-54 \Rightarrow \mathbf{z=?}$

Yanıt / The answer is **16**

23. $\left.\begin{array}{l} \frac{2x}{3}=\frac{4y}{5}=\frac{5z}{4} \\ x\cdot y\cdot z=12 \end{array}\right\} \Rightarrow \mathbf{z=?}$

Yanıt / The answer is $\mathbf{\frac{8}{5}}$

24. $\left.\begin{array}{l} \frac{a}{b}=\frac{c}{d}=4 \\ 3a+6c=144 \end{array}\right\} \Rightarrow \mathbf{b+2d=?}$

Yanıt / The answer is **12**

$$\left.\begin{array}{l}\dfrac{a}{3}=\dfrac{b}{4}=\dfrac{c}{5}\\[2mm]\dfrac{a+5}{2b+3c}=\dfrac{33}{23}\end{array}\right\}\Rightarrow \mathbf{a=?}$$

Yanıt / The answer is $\mathbf{\frac{1}{2}}$

2. $\dfrac{a-b}{2}=\dfrac{a+b}{4}=\dfrac{a\cdot b}{9}\Rightarrow \mathbf{b=?}$

Yanıt / The answer is **3**

3. $\dfrac{x}{m}=\dfrac{y}{n}=\dfrac{z}{h}=\dfrac{2}{5}$

$x+2y-z=16$

$m-h=4$

$\Rightarrow \mathbf{n=?}$

Yanıt / The answer is **18**

4. $\dfrac{a}{4}=\dfrac{b}{3}=\dfrac{c}{10}=\dfrac{2a-b+3c}{4x-1}$

$\Rightarrow \mathbf{x=?}$

Yanıt / The answer is **9**

5. $$\left.\begin{array}{l}\dfrac{a}{3}=\dfrac{b}{2x}=\dfrac{x}{4}\\[2mm]a\cdot b=24\end{array}\right\}\Rightarrow \mathbf{a+b=?}$$

Yanıt / The answer is **11**

6. $\dfrac{a-1}{b-2}=\dfrac{2}{3}\ ,\ \dfrac{b+1}{c-1}=\dfrac{3}{4}$

$\Rightarrow \mathbf{2a-c+10=?}$

Yanıt / The answer is **7**

7. $\frac{a}{b} = \frac{c}{d} = k$ ve (and)

$\frac{a^2 + a \cdot c}{b^2 + b \cdot d} = 6k - 9 \Rightarrow \mathbf{k = ?}$

Yanıt / The answer is **3**

8. $\left.\begin{array}{l} \frac{x}{a} = \frac{y}{b} = \frac{z}{c} = \frac{3}{5} \\ 10x - 3y + z = 9 \end{array}\right\} \Rightarrow \mathbf{10a - 3b + c = ?}$

Yanıt / The answer is **15**

9. $\left.\begin{array}{l} ax = by = cz = 12 \\ \frac{abc}{ab + ac + bc} = 3 \end{array}\right\} \Rightarrow \mathbf{x + y + z = ?}$

Yanıt / The answer is **4**

10. $\left.\begin{array}{l} ax = by = cz \\ a : b : c = 4 : 3 : 2 \\ x + y = 35 \end{array}\right\} \Rightarrow \mathbf{z = ?}$

Yanıt / The answer is **30**

11. $\left.\begin{array}{l} \frac{a}{x} = \frac{b}{y} = \frac{c}{z} = \frac{2}{5} \\ 2a - 3b + c = 24 \\ z - 3y = 16 \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **22**

12. $\frac{a}{x} = \frac{b}{y} = \frac{c}{z} = \frac{5}{7}$

$2a - 5b + 3c = 60$

$2x - 5y = 24$

$\Rightarrow \mathbf{z = ?}$

Yanıt / The answer is **20**

13. $\left.\begin{array}{l}\frac{a}{x}=\frac{b}{y}=\frac{c}{z}=\frac{1}{3}\\ 2a+3b-c=4\\ 2x-z=3\end{array}\right\} \Rightarrow \mathbf{y=?}$

Yanıt / The answer is **3**

14. $\frac{a}{d}=\frac{b}{c}=\frac{e}{f}$,

$\frac{a+b+e}{d+c+f}=3 \Rightarrow \frac{\mathbf{a^2+be}}{\mathbf{d^2+cf}}=\mathbf{?}$

Yanıt / The answer is **9**

15. $\frac{a}{5}=\frac{b}{4}=\frac{c}{3}$, $2a-b+c=36 \Rightarrow \mathbf{3a-2c=?}$

Yanıt / The answer is **36**

16. $\frac{x}{a}=\frac{y}{b}=\frac{z}{c}=\frac{2}{3}$,

$2x-y+3z=44$,

$2a+3c=23 \Rightarrow \mathbf{b=?}$

Yanıt / The answer is **–43**

17. $x, y, z \in Z^+$,

$\frac{x\cdot y}{6}=\frac{y\cdot z}{4}=\frac{x\cdot z}{3} \Rightarrow \mathbf{\min(x+y+z)=?}$

Yanıt / The answer is **9**

18. $a, b, c \in N^+$,

$\frac{a\cdot b}{4}=\frac{b\cdot c}{5}=\frac{a\cdot c}{6}$

$41 < a+b+c < 82 \Rightarrow \mathbf{a+b+c=?}$

Yanıt / The answer is **74**

19. $\frac{a}{x}=\frac{b}{y}=\frac{c}{z}=3$, $4a-2b+2c=36$,

$y-z=2 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **4**

20. $\frac{1}{a}+b=\frac{1}{4}$, $a+\frac{1}{b}=3 \Rightarrow \mathbf{\frac{a}{b}=?}$

Yanıt / The answer is **12**

21. $\frac{x}{5}=\frac{3}{0{,}2}$, $x+3y=3 \Rightarrow \mathbf{y=?}$

Yanıt / The answer is **–24**

22. $\frac{x}{4}=\frac{y}{3}=k$, $x+y=14 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **8**

23. $\frac{a}{4}=\frac{b}{7}=k$,

$a+b=121 \Rightarrow \mathbf{a=?}$

Yanıt / The answer is **44**

24. $\left.\begin{array}{l}\frac{a}{2}=\frac{b}{3}=\frac{c}{4}\\ a\cdot b\cdot c=192\end{array}\right\} \Rightarrow \mathbf{a+b+c=?}$

Yanıt / The answer is **18**

1. $$\left.\begin{array}{l} \dfrac{a}{b}=\dfrac{c}{d}=\dfrac{e}{f}=2 \\ 2a+c-e=14 \\ f-d=3 \end{array}\right\} \Rightarrow \mathbf{b=?}$$

Yanıt / The answer is **5**

---

2. $a \in R^{+}$,

$$\frac{a}{3}=\frac{b}{4}=\frac{c}{5}\ ,\ b\cdot c=180 \ \Rightarrow\ \mathbf{a=?}$$

Yanıt / The answer is **9**

---

3. $$\left.\begin{array}{l} \dfrac{x\cdot y}{z\cdot t}=\dfrac{4}{3} \\ \dfrac{x\cdot t}{y\cdot z}=\dfrac{2}{3} \end{array}\right\} \Rightarrow \mathbf{\frac{y^2}{t^2}=?}$$

Yanıt / The answer is **2**

---

4. $$a-b=\frac{a+b}{7}=\frac{a\cdot b}{24} \ \Rightarrow\ \mathbf{a-b=?}$$

Yanıt / The answer is **2**

---

5. $$\frac{x\cdot y}{3\sqrt{2}}=\frac{y\cdot z}{5\sqrt{2}}=\frac{x\cdot z}{10}=3 \Rightarrow \mathbf{x\cdot y\cdot z=?}$$

Yanıt / The answer is **90**

---

6. $2x + xy = k$,

$x = 2 \Rightarrow y = 3$

$x = 1 \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is **8**

7. $\left.\begin{array}{l} \dfrac{x \cdot y}{z} = 4 \\[2ex] \dfrac{y \cdot z}{x} = 3 \\[2ex] \dfrac{x \cdot z}{y} = 8 \end{array}\right\} \Rightarrow \mathbf{x^2 + y^2 + z^2 = ?}$

Yanıt / The answer is **68**

8. $\left.\begin{array}{l} ax = by = cz = 4 \\ x + y + z = 12 \end{array}\right\} \Rightarrow \mathbf{\dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c} = ?}$

Yanıt / The answer is **3**

9. $\left.\begin{array}{l} 2a = 3b = 5c \\[1ex] \dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c} = 2 \end{array}\right\} \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **5/2**

10. $\left.\begin{array}{l} 2x = 3y = 4z \\ x \cdot y \cdot z = 576 \end{array}\right\} \Rightarrow \mathbf{x + y + z = ?}$

Yanıt / The answer is **26**

11. $\left.\begin{array}{l} ax = by = cz = 30 \\[1ex] \dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z} = 3 \end{array}\right\} \Rightarrow \mathbf{a + b + c = ?}$

Yanıt / The answer is **90**

12. $\left.\begin{array}{l} az = bx = cy = 4 \\ x + y + z = 16 \end{array}\right\} \Rightarrow \mathbf{\dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c} = ?}$

Yanıt / The answer is **1**

13. $xy = 18,$

$yz = 12,$

$x + z = 30 \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is **1**

14. $\frac{3}{x} = \frac{y}{5} = \frac{z}{2},$

$\frac{2}{x} + y - z = 22 \Rightarrow \mathbf{2x = ?}$

Yanıt / The answer is **1**

15. $x, y, z \in Z^-$

$\frac{a}{0{,}6} = \frac{b}{0{,}5} = \frac{c}{0{,}7} \Rightarrow \mathbf{? > ? > ?}$

Yanıt / The answer is **b > a > c**

16. $\frac{a}{2} = \frac{b}{5}, \sqrt{5a} + \sqrt{2b} = 16 \Rightarrow \mathbf{\frac{5a}{2} + b = ?}$

Yanıt / The answer is **64**

17. $2x = 3y = 6z,$

$\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = \frac{11}{36} \Rightarrow \mathbf{x + y - z = ?}$

Yanıt / The answer is **24**

18. $x, y, z \in Z^+$

$x : y : z = 1 : 2 : 4$

$x^2 + y^2 + z^2 = 21$

$\Rightarrow \mathbf{y + z - x = ?}$

Yanıt / The answer is **5**

19. $ax = by = cz = \frac{2}{3}$,

$xy + xz + yz = 16xyz \Rightarrow \mathbf{a + b + c = ?}$

Yanıt / The answer is $\mathbf{\frac{32}{3}}$

20. $x : y : z = 2 : 2 : 5$

$\frac{x^2 + y^2 + z^2}{2x + y + z} = 6 \Rightarrow \mathbf{x \cdot y + z = ?}$

Yanıt / The answer is **26**

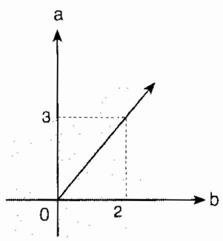
21. $\frac{a}{5} = \frac{b}{4} = \frac{c}{3} = \frac{2a - b + kc}{12} \Rightarrow \mathbf{k = ?}$

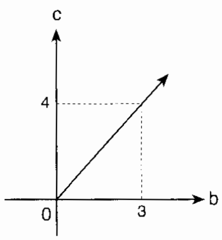
Yanıt / The answer is **2**

22. $\left.\begin{array}{l} x - \frac{1}{y} = 3 \\ \frac{1}{x} - y = 4 \end{array}\right\} \Rightarrow \mathbf{\frac{x}{y} = ?}$

Yanıt / The answer is $\mathbf{-\frac{3}{4}}$

23.

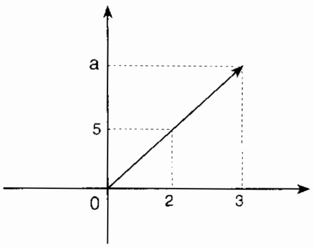




$a + b + c = 46 \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **18**

24.



a = ?

Yanıt / The answer is $\mathbf{\frac{15}{2}}$

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $$\left.\begin{aligned}&\frac{a}{2}=\frac{b}{3}=\frac{c}{4}\\&a+b+c=18\end{aligned}\right\}\Rightarrow \mathbf{a+b-c=?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

2. $$\left.\begin{aligned}&\frac{x}{4}=\frac{y}{5}=\frac{z}{9}\\&x+z-y=24\end{aligned}\right\}\Rightarrow \mathbf{y=?}$$

A) 5 B) 10 C) 15 D) 20 E) 25

3. a : b : c = 5 : 6 : 7,
a + b + c = 36
⇒ **a = ?**

A) 5 B) 10 C) 15 D) 20 E) 25

4. x : 3 = y : 5,
y − x = 8
⇒ **x = ?**

A) 2 B) 4 C) 6 D) 8 E) 12

5. $\frac{x}{6}=\frac{4}{y}=\frac{z}{3} \Rightarrow \mathbf{y(x+z)=?}$

A) 12 B) 24 C) 36 D) 48 E) 60

6. $\frac{a}{b}=\frac{2}{5},\ \frac{b}{c}=\frac{3}{8} \Rightarrow \mathbf{\frac{a}{c}=?}$

A) $\frac{1}{20}$ B) $\frac{1}{10}$ C) $\frac{3}{20}$ D) $\frac{1}{5}$ E) $\frac{1}{4}$

7. $\frac{a}{b}=\frac{3}{7},\ \frac{b}{c}=\frac{7}{10}$
$a-b+c=36 \Rightarrow \mathbf{c=?}$

A) 60 B) 50 C) 40 D) 30 E) 20

8. $\frac{3a-2b}{a+b}=\frac{6}{5} \Rightarrow \sqrt{\mathbf{\frac{a}{b}}}=\mathbf{?}$

A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) 1 D) $\frac{4}{3}$ E) $\frac{5}{3}$

9. $\frac{x-1}{3}=\frac{y+1}{2}=\frac{z}{4}$,

$x+y+z=27 \Rightarrow \mathbf{x=?}$

A) 7 B) 10 C) 13 D) 16 E) 19

10. $\frac{a}{b}=\frac{c}{d}=\frac{1}{4} \Rightarrow \mathbf{\frac{a \cdot c}{b \cdot d} : \frac{a}{b} = ?}$

A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) $\frac{1}{8}$ D) $\frac{1}{16}$ E) $\frac{1}{64}$

11. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{2}{5}$

$\Rightarrow \mathbf{\left(\frac{a}{a+b}\right)\left(\frac{c+d}{d}\right)\left(\frac{e+f}{f}\right)=?}$

A) $\frac{14}{25}$ B) $\frac{2}{5}$ C) $\frac{7}{25}$ D) $\frac{4}{25}$ E) $\frac{4}{5}$

12. $\frac{\frac{a}{b}}{c}=\frac{x}{\frac{y}{z}} \Rightarrow \mathbf{a \cdot c \cdot y \cdot z = ?}$

A) b B) $\frac{x}{b}$ C) bx D) x E) $a \cdot b \cdot x$

13. $a:b=3:5$

$\Rightarrow \mathbf{\frac{(a-b)^2+4ab}{(a+b)^2-4ab}=?}$

A) 8 B) 10 C) 12 D) 14 E) 16

14. $\left.\begin{array}{l}\frac{x}{3}=\frac{2}{y}\\ x-y=6\end{array}\right\} \Rightarrow \mathbf{(x+y)^2=?}$

A) 30 B) 40 C) 50 D) 60 E) 70

15. $a \cdot b = 64$

$b \cdot c = 16$

$a + c = 15$

$\Rightarrow \mathbf{a = ?}$

A) 10 B) 11 C) 12 D) 13 E) 14

16. $a > 0$

$\left.\begin{array}{l}a \cdot b = 15\\ b \cdot c = 20\\ a \cdot c = 24\end{array}\right\} \Rightarrow \mathbf{? > ? > ?}$

A) a > b > c B) a > c > b

C) b > a > c D) c > a > b

E) c > b > a

Yanıtlar / Answers

1. B	4. E	7. A	10. B	13. E	16. D
2. C	5. C	8. D	11. A	14. D	
3. B	6. C	9. B	12. C	15. C	

1. $\frac{a}{b}=\frac{c}{d}=\frac{2}{3} \Rightarrow \frac{\mathbf{a \cdot c}}{\mathbf{b \cdot d}}=\mathbf{?}$

A) 1 B) $\frac{2}{3}$ C) $\frac{4}{9}$ D) $\frac{3}{2}$ E) $\frac{9}{4}$

2. $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=\frac{1}{2} \Rightarrow \frac{\mathbf{a}}{\mathbf{d}}=\mathbf{?}$

A) $\frac{1}{16}$ B) $\frac{1}{8}$ C) $\frac{1}{4}$ D) $\frac{1}{2}$ E) 1

3. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{4}{7} \Rightarrow \frac{\mathbf{a+2c-e}}{\mathbf{b+2d-f}}=\mathbf{?}$

A) $\frac{3}{7}$ B) $\frac{4}{7}$ C) $\frac{5}{7}$ D) $\frac{6}{7}$ E) 1

4. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{6}{5} \Rightarrow \frac{\mathbf{a+c}}{\mathbf{b+d}} \cdot \frac{\mathbf{f}}{\mathbf{e}}=\mathbf{?}$

A) 1 B) $\frac{2}{5}$ C) $\frac{3}{5}$ D) $\frac{5}{6}$ E) $\frac{6}{5}$

5. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{2}{5}$,

$a+2c-e=10$

$b-f=6 \Rightarrow \mathbf{2d=?}$

A) 20 B) 19 C) 18 D) 17 E) 16

6. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=12 \Rightarrow \frac{\mathbf{2a-c+3e}}{\mathbf{6b-3d+9f}}=\mathbf{?}$

A) 1 B) 2 C) 3 D) 4 E) 5

7. $3a=4b=5c$,

$\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=\frac{6}{5} \Rightarrow \mathbf{c=?}$

A) 2 B) 3 C) 4 D) 5 E) 6

8. $\frac{3a-5}{a}=\frac{3b-2c-a}{b}=\frac{4c-b+5}{c}=k \Rightarrow \mathbf{k=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

9. $$\left.\begin{aligned} \frac{a\cdot b}{c} &= 6 \\ \frac{a\cdot c}{b} &= 2 \\ \frac{b\cdot c}{a} &= 3 \end{aligned}\right\} \Rightarrow \mathbf{a^2+b^2+c^2=?}$$

A) 28 B) 32 C) 34 D) 36 E) 40

10. $$\left.\begin{aligned} x+\frac{y}{z} &= 36 \\ z+\frac{y}{x} &= 9 \end{aligned}\right\} \Rightarrow \frac{\mathbf{x-z}}{\mathbf{z}}=\mathbf{?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

11. $$\left.\begin{aligned} a\cdot x = b\cdot y = c\cdot z &= \frac{2}{3} \\ x+y+z &= 18 \end{aligned}\right\} \Rightarrow \frac{\mathbf{1}}{\mathbf{a}}+\frac{\mathbf{1}}{\mathbf{b}}+\frac{\mathbf{1}}{\mathbf{c}}=\mathbf{?}$$

A) 6 B) 12 C) 18 D) 27 E) 36

12. $$\frac{x}{y}=\frac{3}{5} \Rightarrow \frac{\mathbf{x^2-y^2}}{\mathbf{(x+y)^2}}=\mathbf{?}$$

A) $-\frac{1}{8}$ B) $-\frac{1}{4}$ C) $-\frac{1}{2}$ D) -1 E) 1

13. $x, y, z \in Z^+$

$3x = 6y = 9z$

$\Rightarrow$ **min(x + y + z) = ?**

A) 11 B) 17 C) 22 D) 28 E) 33

14. $x, y, z \in Z^-$

$6x = 8y = 10z$

$\Rightarrow$ **max(x + y + z) = ?**

A) –47 B) –60 C) –64 D) –70 E) –81

15. $$\frac{a_1}{a_2}=\frac{a_2}{a_3}=\ldots=\frac{a_n}{a_{n+1}}=4$$

$a_1 = 16 \Rightarrow \mathbf{a_4} = \mathbf{?}$

A) $\frac{1}{8}$ B) $\frac{1}{6}$ C) $\frac{1}{4}$ D) $\frac{1}{2}$ E) 1

16. $3a = 4b$,

$8b = 5c \Rightarrow$ **a : b : c = ? : ? : ?**

A) 3 : 4 : 5 B) 6 : 8 : 10

C) 20 : 15 : 24 D) 16 : 24 : 36

E) 20 : 24 : 15

Yanıtlar / Answers

1. C	**4. A**	**7. A**	**10. C**	**13. A**	**16. C**
2. B	**5. B**	**8. B**	**11. D**	**14. A**	
3. B	**6. D**	**9. D**	**12. B**	**15. C**	

1. $\frac{x}{5}=\frac{2}{y} \Rightarrow \mathbf{x \cdot y = ?}$

A) 2 B) 5 C) 10 D) 15 E) 20

2. $a : 12 : b = 3 : 6 : 5 \Rightarrow \mathbf{a + b = ?}$

A) 12 B) 16 C) 20 D) 24 E) 26

3. $a : b : c = 2 : 3 : 5$

$2a + 3b - c = 32 \Rightarrow \mathbf{b = ?}$

A) 12 B) 10 C) 8 D) 6 E) 4

4. $a : b : c = 3 : 5 : 8 \Rightarrow \mathbf{\frac{a+b}{2c} = ?}$

A) 2 B) $\frac{3}{2}$ C) 1 D) $\frac{1}{2}$ E) $\frac{1}{4}$

5. $\frac{a}{b}=3 \Rightarrow \mathbf{\frac{3a+2b}{a-2b} = ?}$

A) 9 B) 11 C) 13 D) 15 E) 17

6. $3a = 5b \Rightarrow \mathbf{\frac{2a-3b}{2b-a} = ?}$

A) 1 B) $\frac{3}{2}$ C) 2 D) $\frac{5}{2}$ E) 3

7. $\frac{a}{2}=\frac{b}{5} \Rightarrow \mathbf{\frac{4a-b}{2a-b} = ?}$

A) 2 B) 0 C) –1 D) –2 E) –3

8. $\frac{a}{b}=\frac{c}{d}=\frac{3}{4} \Rightarrow \mathbf{\frac{a+2b}{b}+\frac{2c-d}{d} = ?}$

A) $\frac{13}{4}$ B) $\frac{11}{21}$ C) $\frac{9}{4}$ D) $\frac{7}{4}$ E) $\frac{5}{4}$

9. $\frac{a}{b}=\frac{c}{d}=3 \Rightarrow \frac{\mathbf{a+b}}{\mathbf{a-b}}+\frac{\mathbf{c+d}}{\mathbf{c-d}}=\mathbf{?}$

A) 2 B) 3 C) 4 D) 5 E) 6

10. $\frac{a}{b}=\frac{2}{5},\ \frac{b}{c}=\frac{3}{4}$

$a + b + c = 82 \Rightarrow \mathbf{a = ?}$

A) 10 B) 11 C) 12 D) 13 E) 14

11. $4a = 5b,\ 3a = 2c,$

$2a - b + c = 54 \Rightarrow \mathbf{a = ?}$

A) 15 B) 20 C) 25 D) 30 E) 35

12. $\left.\begin{array}{l} 2x=3y \\ 6y=7z \end{array}\right\} \Rightarrow \frac{\mathbf{x}}{\mathbf{z}}=\mathbf{?}$

A) $\frac{7}{2}$ B) $\frac{7}{4}$ C) 1 D) $\frac{7}{10}$ E) $\frac{7}{12}$

13. $\left.\begin{array}{l} \frac{a+b}{2}=7 \\ \frac{a-b}{3}=2 \end{array}\right\} \Rightarrow \mathbf{a=?}$

A) 10 B) 9 C) 8 D) 7 E) 6

14. $\frac{a+b}{9}=\frac{a-b}{3} \Rightarrow \frac{\mathbf{a}}{\mathbf{b}}=\mathbf{?}$

A) 1 B) $\frac{3}{2}$ C) 2 D) $\frac{5}{2}$ E) 3

15. $\frac{a+3b}{b}=\frac{7}{2} \Rightarrow \frac{\mathbf{a}}{\mathbf{b}}=\mathbf{?}$

A) $\frac{1}{2}$ B) 1 C) 2 D) $\frac{5}{2}$ E) 3

16. $\frac{a-2b}{2a+b}=\frac{2}{3} \Rightarrow \frac{\mathbf{a+b}}{\mathbf{a-b}}=\mathbf{?}$

A) $\frac{-7}{4}$ B) $\frac{-7}{9}$ C) $\frac{1}{4}$ D) $\frac{7}{9}$ E) $\frac{7}{4}$

Yanıtlar / Answers

1. C	**4. D**	**7. E**	**10. C**	**13. A**	**16. D**
2. B	**5. B**	**8. A**	**11. B**	**14. C**	
3. A	**6. A**	**9. C**	**12. B**	**15. A**	

1. $\frac{a}{8}=\frac{9}{b} \Rightarrow \mathbf{a \cdot b = ?}$

A) 68 B) 72 C) 76 D) 80 E) 84

2. x : y : z = 3 : 5 : 7

x + y + z = 45

$\Rightarrow$ **x + y − z = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

3. a : 4 = b : 5, a + b = 18

$\Rightarrow$ **b − a = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

4. $$\left.\begin{array}{l}\frac{a}{4}=\frac{b}{5}=\frac{c}{6} \\ b+c-a=14\end{array}\right\} \Rightarrow \mathbf{a+c-b=?}$$

A) 3 B) 5 C) 8 D) 10 E) 13

5. a > 0,

$$\left.\begin{array}{l}\frac{a}{7}=\frac{b}{5} \\ a \cdot b=140\end{array}\right\} \Rightarrow \mathbf{a-b=?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

6. $\frac{a}{b}=\frac{3}{8}, \frac{b}{c}=\frac{4}{5} \Rightarrow \mathbf{\frac{a}{c}=?}$

A) $\frac{3}{5}$ B) $\frac{3}{10}$ C) $\frac{3}{11}$ D) $\frac{4}{15}$ E) $\frac{5}{16}$

7. $$\left.\begin{array}{l}\frac{a}{b}=\frac{1}{3}, \frac{b}{c}=\frac{2}{3} \\ c-a-b=4\end{array}\right\} \Rightarrow \mathbf{a=?}$$

A) 8 B) 7 C) 6 D) 5 E) 4

8. $\frac{x+2y}{x-y}=\frac{4}{3} \Rightarrow \mathbf{\frac{x}{y}=?}$

A) 8 B) 9 C) 10 D) 11 E) 12

9. $\left.\begin{array}{l} x\cdot y=80 \\ y\cdot z=16 \\ x-z=12 \end{array}\right\} \Rightarrow \mathbf{z=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $\dfrac{a^3}{16}=\dfrac{16}{a} \Rightarrow \mathbf{a=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

11. $\dfrac{x+3}{6}=\dfrac{y+1}{2} \Rightarrow \dfrac{\mathbf{x}}{\mathbf{y}}=\mathbf{?}$

A) 5 B) 4 C) 3 D) 2 E) 1

12. $\dfrac{x}{y}=\dfrac{z}{t}=\dfrac{1}{2} \Rightarrow \dfrac{\mathbf{y}}{\mathbf{x}}+\dfrac{\mathbf{z+t}}{\mathbf{t}}=\mathbf{?}$

A) $\dfrac{1}{2}$ B) 1 C) $\dfrac{3}{2}$ D) $\dfrac{5}{2}$ E) $\dfrac{7}{2}$

13. $\left.\begin{array}{l} x+y=12 \\ x-y=4 \end{array}\right\} \Rightarrow \dfrac{\mathbf{x}}{\mathbf{y}}=\mathbf{?}$

A) 1 B) 2 C) 3 D) 4 E) 5

14. $\dfrac{a}{b}=\dfrac{c}{d}=\dfrac{e}{f}=\dfrac{3}{7} \Rightarrow \left(\dfrac{\mathbf{a+b}}{\mathbf{b}}\right)\cdot\left(\dfrac{\mathbf{d}}{\mathbf{c+d}}\right)\cdot\left(\dfrac{\mathbf{f-e}}{\mathbf{e}}\right)=\mathbf{?}$

A) $\dfrac{1}{3}$ B) $\dfrac{2}{3}$ C) 1 D) $\dfrac{4}{3}$ E) $\dfrac{5}{3}$

15. $\dfrac{a}{\frac{b}{c}}=\dfrac{4}{b} \Rightarrow \dfrac{\mathbf{a\cdot c}}{\mathbf{2}}=\mathbf{?}$

A) 1 B) 2 C) 3 D) 4 E) 5

16. $\left.\begin{array}{l} 4a=7b \\ 3b=c \end{array}\right\} \Rightarrow \mathbf{a:b:c=?}$

A) 7 : 4 : 12
B) 4 : 7 : 12
C) 3 : 4 : 12
D) 3 : 4 : 7
E) 12 : 7 : 4

Yanıtlar / Answers

1. B	**4. D**	**7. A**	**10. D**	**13. B**	**16. A**
2. C	**5. D**	**8. C**	**11. C**	**14. D**	
3. B	**6. B**	**9. C**	**12. E**	**15. B**	

1. $\frac{a}{2}=\frac{b}{5}=4 \Rightarrow \mathbf{a+b=?}$

A) 16 B) 20 C) 24 D) 28 E) 32

2. $\frac{a}{5}=\frac{b}{6}=\frac{c}{7}=2 \Rightarrow \mathbf{a+b-c=?}$

A) 16 B) 14 C) 12 D) 10 E) 8

3. $\left.\begin{array}{l}\frac{a}{2}=\frac{b}{3}=\frac{c}{5}\\ a+b+c=100\end{array}\right\} \Rightarrow \mathbf{a=?}$

A) 20 B) 17 C) 15 D) 13 E) 11

4. $\frac{a}{2}=\frac{b}{3}=c$

$a+b+c=30 \Rightarrow \mathbf{c=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $\left.\begin{array}{l}\frac{a}{4}=\frac{b}{5}=\frac{c}{6}\\ a-2b+3c=72\end{array}\right\} \Rightarrow \mathbf{a=?}$

A) 24 B) 28 C) 30 D) 36 E) 40

6. $\left.\begin{array}{l}\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=4\\ 3a+2c-e=84\end{array}\right\} \Rightarrow \mathbf{3b+2d-f=?}$

A) 21 B) 19 C) 17 D) 15 E) 13

7. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=6 \Rightarrow \mathbf{\frac{3a+4c+2e}{3b+4d+2f}=?}$

A) 2 B) 4 C) 6 D) 8 E) 12

8. $\left.\begin{array}{l}\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=k\\ \frac{2a+3c-4e}{mb+3d-4f}=k\end{array}\right\} \Rightarrow \mathbf{m=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

9. $\left.\begin{array}{r} \frac{a}{b}=\frac{c}{d}=\frac{e}{f}=3 \\ a+2c+3e=48 \\ 2d+3f=12 \end{array}\right\} \Rightarrow \mathbf{b=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $\left.\begin{array}{r} \frac{a}{b}=\frac{c}{d}=\frac{e}{f}=3 \\ 2a+c-e=24 \\ f-d=-6 \end{array}\right\} \Rightarrow \mathbf{a=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

11. $3a=7b \Rightarrow \frac{\mathbf{a+3b}}{\mathbf{a-b}}=\mathbf{?}$

A) 2 B) 4 C) 6 D) 8 E) 12

12. $\left.\begin{array}{l} 2a=5b \\ a^2+b^2=116 \end{array}\right\} \Rightarrow \mathbf{a=?}$

A) 8 B) 9 C) 10 D) 11 E) 12

13. $3x=4y=6z \Rightarrow \frac{\mathbf{x+y}}{\mathbf{z}}=\mathbf{?}$

A) 1 B) 2 C) $\frac{5}{2}$ D) 3 E) $\frac{7}{2}$

14. $3x=5y=8z$,
$x+y+z=79 \Rightarrow \mathbf{x+y=?}$

A) 40 B) 48 C) 56 D) 64 E) 72

15. $2a=4b=5c$,
$2a-3b+4c=63 \Rightarrow \mathbf{b=?}$

A) 15 B) 12 C) 9 D) 6 E) 3

16. $\frac{a}{3}=\frac{b}{4}=\frac{c}{5} \Rightarrow \frac{\mathbf{a \cdot b+b \cdot c}}{\mathbf{a^2+b^2+c^2}}=\mathbf{?}$

A) $\frac{9}{25}$ B) $\frac{12}{25}$ C) $\frac{14}{25}$ D) $\frac{16}{25}$ E) $\frac{19}{25}$

Yanıtlar / Answers

1. D	**4. E**	**7. C**	**10. C**	**13. E**	**16. D**
2. E	**5. A**	**8. B**	**11. B**	**14. D**	
3. A	**6. A**	**9. D**	**12. C**	**15. A**	

1. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{4}{5} \Rightarrow \frac{\mathbf{a+c+e}}{\mathbf{b+d+f}}=\mathbf{?}$

A) $\frac{1}{5}$ B) $\frac{2}{5}$ C) $\frac{3}{5}$ D) $\frac{4}{5}$ E) 1

2. $\frac{a}{b}=\frac{b}{c}=\frac{c}{d}=\frac{2}{3} \Rightarrow \frac{\mathbf{a}}{\mathbf{d}}=\mathbf{?}$

A) $\frac{8}{27}$ B) $\frac{5}{27}$ C) $\frac{4}{27}$ D) $\frac{4}{9}$ E) $\frac{2}{3}$

3. $a:b=3:5 \Rightarrow \frac{\mathbf{b^2-a^2}}{\mathbf{4ab}}=\mathbf{?}$

A) $\frac{1}{15}$ B) $\frac{2}{15}$ C) $\frac{1}{5}$ D) $\frac{4}{15}$ E) $\frac{1}{3}$

4. $\left.\begin{array}{l}\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{1}{4}\\ a+c-e=5\end{array}\right\} \Rightarrow \mathbf{b+d-f=?}$

A) 5 B) 10 C) 15 D) 20 E) 25

5. $\left.\begin{array}{l}\frac{x}{y}=\frac{z}{t}=\frac{5}{8}\\ 2x-3z=10\end{array}\right\} \Rightarrow \mathbf{3t-2y=?}$

A) –16 B) –10 C) 10 D) 12 E) 16

6. x, y, z ∈ Z^+,

$3x=5y=6z$

$\Rightarrow$ **min(x + y + z) = ?**

A) 18 B) 19 C) 20 D) 21 E) 22

7. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=9 \Rightarrow \frac{\mathbf{a-c-3e}}{\mathbf{2b-2d-6f}}=\mathbf{?}$

A) $\frac{1}{2}$ B) 1 C) $\frac{9}{2}$ D) 9 E) 18

8. a, b, c ∈ Z^-,

$7a=2b=9c$

$\Rightarrow$ **max(a + b + c) = ?**

A) –95 B) –90 C) –86 D) –82 E) –30

9. $2a = 3b = 5c$

$\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=\frac{2}{5} \Rightarrow \mathbf{c = ?}$

A) 4 B) 5 C) 6 D) 7 E) 8

10. $\frac{2a-c}{b}=\frac{2b-a}{a}=\frac{2c-b}{c}=k \Rightarrow \mathbf{k = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

11. $\left.\begin{array}{l} a+\frac{c}{b}=27 \\ b+\frac{c}{a}=9 \end{array}\right\} \Rightarrow \mathbf{\frac{b}{a} = ?}$

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) 1 D) 2 E) 3

12. $\frac{a}{4}=\frac{b}{6}=\frac{c}{8} \Rightarrow \mathbf{\frac{a \cdot b}{c(a-b)} = ?}$

A) $-\frac{1}{2}$ B) $-\frac{1}{3}$ C) $-\frac{3}{2}$ D) $\frac{1}{3}$ E) $\frac{3}{2}$

13. $\left.\begin{array}{l} \frac{a \cdot c}{b}=3 \\ \frac{a \cdot b}{c}=4 \\ \frac{b \cdot c}{a}=5 \end{array}\right\} \Rightarrow \mathbf{a^2+b^2+c^2 = ?}$

A) 45 B) 46 C) 47 D) 48 E) 49

14. $\left.\begin{array}{l} xa=yb=zc=\frac{1}{4} \\ x+y+z=12 \end{array}\right\} \Rightarrow \mathbf{\frac{1}{a}+\frac{1}{b}+\frac{1}{c} = ?}$

A) 12 B) 24 C) 48 D) 52 E) 60

15. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=\frac{7}{9} \Rightarrow \mathbf{\frac{a \cdot d \cdot e}{b \cdot c \cdot f} = ?}$

A) $\frac{1}{9}$ B) $\frac{1}{3}$ C) $\frac{7}{9}$ D) $\frac{49}{81}$ E) 1

16. $\frac{2a-4}{a}=\frac{2b+3}{b}=\frac{2c+1}{c}=k \Rightarrow \mathbf{\frac{k}{2} = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

Yanıtlar / Answers

1. D	4. D	7. C	10. A	13. C	16. A
2. A	5. A	8. A	11. B	14. C	
3. D	6. D	9. B	12. C	15. C	

1. $\frac{a}{b}=\frac{3}{4},\ \frac{b}{c}=\frac{8}{7} \Rightarrow \mathbf{\frac{a+b-c}{a-b+c}=?}$

A) $\frac{4}{5}$ B) 1 C) $\frac{6}{5}$ D) $\frac{7}{5}$ E) $\frac{8}{5}$

2. $\left.\begin{array}{l} a+\frac{1}{b}=3 \\ b+\frac{1}{a}=7 \end{array}\right\} \Rightarrow \mathbf{\frac{a}{b}=?}$

A) $\frac{3}{7}$ B) $\frac{4}{7}$ C) $\frac{5}{7}$ D) $\frac{6}{7}$ E) 1

3. $\left.\begin{array}{l} a+\frac{2}{b}=4 \\ 3b+\frac{6}{a}=9 \end{array}\right\} \Rightarrow \mathbf{\frac{a^2+b^2}{a \cdot b}=?}$

A) $\frac{1}{16}$ B) $\frac{1}{9}$ C) $\frac{25}{12}$ D) $\frac{1}{4}$ E) $\frac{25}{144}$

4. $2a = 3b = 4c$,

$\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=1 \Rightarrow \mathbf{b=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $\left.\begin{array}{l} ax=by=cz=4 \\ a+b+c=36 \end{array}\right\} \Rightarrow \mathbf{\frac{1}{x}+\frac{1}{y}+\frac{1}{z}=?}$

A) 4 B) 8 C) 9 D) 12 E) 16

6. $3a = 4b = 5c$,

$\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=2 \Rightarrow \mathbf{a=?}$

A) 6 B) 5 C) 4 D) 3 E) 2

7. $ax = by = cz = 91$

$x + y + z = 13$

$\Rightarrow \mathbf{\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=?}$

A) $\frac{1}{7}$ B) $\frac{4}{7}$ C) 2 D) 4 E) 7

8. $x, y, z \in R^+$,

$\frac{3}{2xy}=\frac{1}{4yz}=\frac{2}{5xz} \Rightarrow \mathbf{?<?<?}$

A) $y < z < x$ B) $x < y < z$ C) $z < x < y$
D) $y < x < z$ E) $z < y < x$

9. $\frac{1}{4x}=\frac{3}{2y}=\frac{5}{6z} \Rightarrow$ **x:y:z=?:?:?**

A) 18 : 10 : 3 B) 10 : 18 : 3 C) 3 : 10 : 18 D) 3 : 18 : 10 E) 3 : 18 : 24

10. $\frac{a+b+c}{25}=\frac{a+c}{13}=\frac{b+c}{17} \Rightarrow \frac{\mathbf{b}}{\mathbf{c}}=\mathbf{?}$

A) $\frac{17}{5}$ B) $\frac{12}{5}$ C) $\frac{11}{5}$ D) $\frac{5}{12}$ E) $\frac{5}{11}$

11. $\frac{a}{3}=\frac{b}{5}=\frac{c}{7}$

$\frac{3}{a}+\frac{5}{b}+\frac{7}{c}=\frac{1}{3} \Rightarrow$ **a − b = ?**

A) −6 B) −9 C) −12 D) −18 E) −36

12. $\frac{a-b}{a+b}=\frac{5}{6} \Rightarrow \frac{\mathbf{a^2-b^2}}{\mathbf{a^2+b^2}}=\mathbf{?}$

A) $\frac{36}{25}$ B) $\frac{60}{61}$ C) $\frac{121}{61}$ D) $\frac{25}{36}$ E) $\frac{339}{20}$

13. $\frac{a-2}{3}=\frac{b-3}{2}=\frac{c-5}{4}$

$2a-b+c=22 \Rightarrow$ **a = ?**

A) 8 B) 6 C) 3 D) 2 E) 1

14. x, y, z, t ∈ R^+,

$\frac{x}{y}=\frac{y}{z}=\frac{z}{t}=4 \Rightarrow \frac{\mathbf{x}}{\mathbf{t}}=\mathbf{?}$

A) 128 B) 64 C) 32 D) 16 E) 4

15. $\left.\begin{array}{l}\frac{x\cdot y}{z}=6\\ \frac{x\cdot z}{y}=3\\ \frac{y\cdot z}{x}=8\end{array}\right\} \Rightarrow \mathbf{x^2+y^2+z^2=?}$

A) 64 B) 81 C) 90 D) 96 E) 100

16. $x+\frac{1}{y}=2$ ve $y+\frac{1}{x}=5 \Rightarrow \frac{\mathbf{x+2y}}{\mathbf{x-2y}}=\mathbf{?}$

A) −1,5 B) −1 C) 0 D) 1 E) 1,5

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. D	4. C	7. A	10. B	13. A	16. A
2. A	5. C	8. E	11. D	14. B	
3. C	6. E	9. D	12. B	15. C	

1. $\frac{x}{y}=\frac{4}{3} \Rightarrow \frac{\mathbf{2y^2-3x^2}}{\mathbf{5\cdot xy}}=\mathbf{?}$

A) $-\frac{1}{4}$ B) $-\frac{1}{3}$ C) $-\frac{1}{2}$

D) $\frac{1}{3}$ E) $\frac{1}{2}$

2. x, y, z ∈ R^+,

$x=\frac{y}{2}=\frac{z}{3}, \ \frac{x\cdot y\cdot z}{x+y+z}=49$

$\Rightarrow$ **z − y + x = ?**

A) 7 B) 12 C) 14 D) 18 E) 21

3. $\frac{x}{y}=\frac{m}{n}=4 \Rightarrow \frac{\mathbf{y}}{\mathbf{x}}\cdot\left(\frac{\mathbf{y-x}}{\mathbf{3\cdot y}}\right)\cdot\frac{\mathbf{m+n}}{\mathbf{n}}=\mathbf{?}$

A) $-\frac{4}{5}$ B) $-\frac{5}{4}$ C) $\frac{4}{5}$

D) $\frac{5}{4}$ E) $\frac{3}{4}$

4. $\frac{a}{b}=\frac{c}{d}=\frac{e}{f}=5,$, 3a − 2c + e = 40,

2d − f = 1 $\Rightarrow$ **b = ?**

A) −3 B) −2 C) 1 D) 2 E) 3

5. $\frac{x}{y}=\frac{z}{v}=k, \ \frac{4x-5z}{4y+3}=k \Rightarrow \mathbf{v=?}$

A) $-\frac{5}{3}$ B) $-\frac{3}{5}$ C) $-\frac{3}{4}$

D) $\frac{3}{5}$ E) $\frac{5}{3}$

6. $x-\frac{1}{y}=15, \ y-\frac{1}{x}=3 \Rightarrow \frac{\mathbf{y}}{\mathbf{x}}=\mathbf{?}$

A) $\frac{1}{5}$ B) $\frac{1}{3}$ C) $\frac{2}{5}$ D) $\frac{2}{3}$ E) $\frac{3}{5}$

7. $\frac{x^2}{2y}=\frac{y^2}{2x}=3 \Rightarrow \mathbf{x+y=?}$

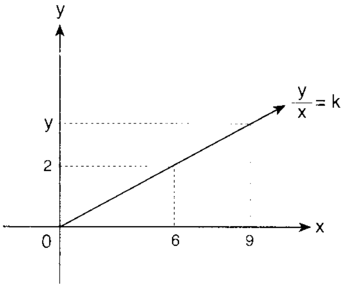
A) −6 B) −3 C) −1 D) 3 E) 6

8. 3x = 4y = 5z,

x + y + z = 141 $\Rightarrow$ **y = ?**

A) 30 B) 32 C) 36 D) 45 E) 48

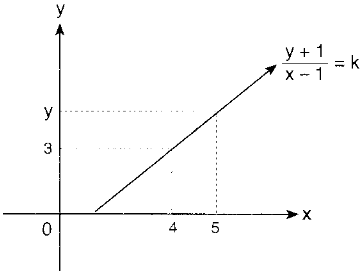
9.


y
$\frac{y}{x} = k$
y
2
0
6
9
x

$\Rightarrow$ **y = ?**

A) $\frac{5}{2}$ B) 3 C) $\frac{7}{2}$ D) 4 E) $\frac{9}{2}$

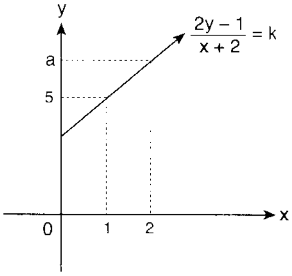
10.


y
$\frac{y+1}{x-1} = k$
y
3
0
4
5
x

$\Rightarrow$ **y = ?**

A) 4 B) $\frac{13}{3}$ C) $\frac{14}{3}$ D) 5 E) $\frac{16}{3}$

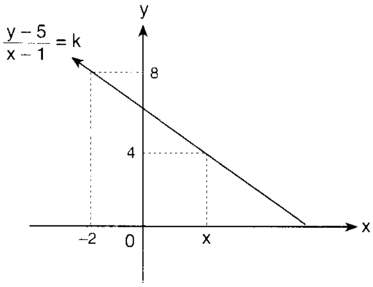
11.


y
$\frac{2y-1}{x+2} = k$
a
5
0
1
2
x

$\Rightarrow$ **a = ?**

A) $\frac{11}{2}$ B) 6 C) $\frac{13}{2}$ D) 7 E) $\frac{15}{2}$

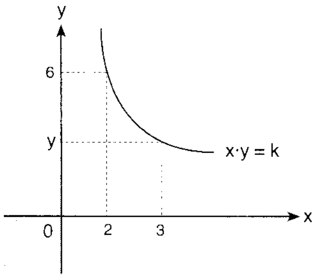
12.


$\frac{y-5}{x-1} = k$
y
8
4
–2
0
x
x

$\Rightarrow$ **x = ?**

A) 1 B) $\frac{3}{2}$ C) 2 D) $\frac{5}{2}$ E) 4

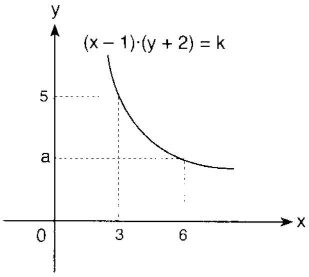
13.


y
6
y
x·y = k
0
2
3
x

$\Rightarrow$ **y = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

14.


y
(x – 1)·(y + 2) = k
5
a
0
3
6
x

$\Rightarrow$ **a = ?**

A) $\frac{4}{5}$ B) 1 C) $\frac{3}{2}$ D) 2 E) $\frac{5}{2}$

Yanıtlar / Answers

1. C	**4. E**	**7. A**	**10. B**	**13. D**
2. C	**5. B**	**8. D**	**11. C**	**14. A**
3. B	**6. A**	**9. B**	**12. C**	

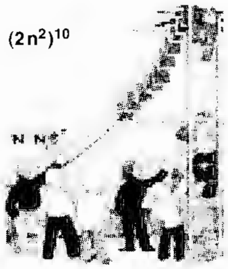
ÜNİTE 3

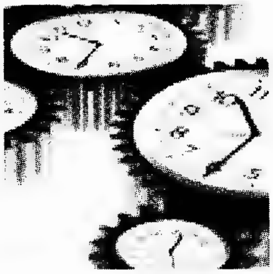
UNIT

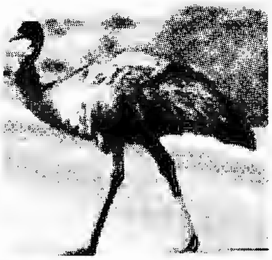
Boole, George [1815 – 1864]

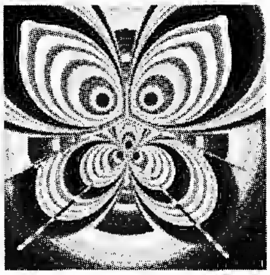
İngiliz matematikçi, matematiksel mantığın babalarından birisi olarak tanınır. İlk büyük çalışması, 1854'de yayımlanan "Düşünme kurallarının incelenmesi (Investigation of the Laws of Thought) " dir. Boolean cebirleri olarak bilinen sembolik çıkarım türünü geliştirmiştir. Onun De Morgan ve diğerleri ile olan çalışması, modern cebirin gelişmesini sağlamıştır.

British mathematician who was one of the founding fathers of mathematical logic. His major work, published in 1854, is his Investigation of the Laws of Thought. The kind of Symbolic argument that he developed led to the study of so-called Boolean algebras, which are of current significance in computing and algebra. His work, together with that of De Morgan and others, helped to pave the way for the development of modern formal algebra.









✓ **KONU ÖZETLERİ** .... **175 – 180**
✓ **ÜSLÜ SAYILAR** .... **181 – 218**
✓ **KÖKLÜ SAYILAR** .... **219 – 256**

✓ SUMMARYS .... 175 – 180
✓ EXPONENTIALS .... 181 – 218
✓ RADICALS .... 219 – 256

BU SAYFADA KONU MATERYALİ YOKTUR.

NO SUBJECT MATERIAL ON THIS PAGE.

ÜSLÜ SAYILAR / EXPONENTIALS

Tanım : $n \in N$ ve $x \in R - \{0\}$ olmak üzere,

$x^n = \underbrace{x \cdot x \cdot x ....x}_{\text{n tane}}$ sayısına, x sayısının n'inci kuvveti denir. x sayısına **taban**, n sayısına da **üs (kuvvet)** denir.

Definition : Provided that $n \in N$ and $x \in R - \{0\}$, the number $x^n = \underbrace{x \cdot x \cdot x ....x}_{\text{n times}}$ is called n^{th} power of x. x is called the **base** and n is called the **power**.

ÜSLÜ SAYILARIN ÖZELLİKLERİ
PROPERTIES of EXPONENTIALS

$\underbrace{x \cdot x \cdot ...... \cdot x}_{\text{n tane / times}} = x^n$

1. $x \in R - \{0\} \Rightarrow x^0 = 1$

   $n \in R \Rightarrow 0^n = 0$

   $n \in R \Rightarrow 1^n = 1$

   0^0 tanımsızdır. / 0^0 is undefined.

2. $x^n \cdot x^m = x^{m+n}$

3. $\frac{x^n}{x^m} = x^{n-m} = \frac{1}{x^{m-n}} \; (x \neq 0)$

4. $(x \cdot y)^n = x^n \cdot y^n$

5. $\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}$

6. $(x^n)^m = (x^m)^n = x^{m \cdot n}$, $(a^n)^m \neq (a)^{(n^m)}$

   a^{n^m} ifadesi bilinemez. / The term a^{n^m} is not known.

7. $x^n = x^m \Rightarrow n = m, \; \begin{pmatrix} x \neq 0 \\ x \neq 1 \\ x \neq -1 \end{pmatrix}$

8. $a^n = b^n \Rightarrow \begin{cases} a = b, & \text{n tek sayı ise [If n is an odd number]} \\ a = \pm b, & \text{n reel sayı ise [If n is a real number]} \end{cases}$

9. $\left(\frac{x}{y}\right)^{-n} = \left(\frac{y}{x}\right)^n$, $x^{-n} = \frac{1}{x^n}, \; (x \neq 0)$

10. $a \cdot x^m + b \cdot x^m - c \cdot x^m = x^m (a + b - c)$

11. $(-a)^{2n} = a^{2n} \quad (n \in N)$

    $(-a)^{2n+1} = -a^{2n+1}$

KÖKLÜ SAYILAR / RADICALS

Tanım / Definition:

$a \in R$, $n \in Z^+$ olmak üzere, / Provided that $a \in R$, $n \in Z^+$,

$\sqrt[n]{a} = x \Rightarrow x^n = a$,

$\sqrt[n]{a^n} = a$, n tek sayı / n is an odd number,

$\sqrt[n]{a^n} = |a|$ n çift sayı / n is an even number,

$a < 0 \Rightarrow \sqrt[n]{a^n} \in R$ n çift sayı / n is an even number.

KÖKLÜ SAYILARIN ÖZELLİKLERİ
PROPERTIES of RADICALS

1. $\sqrt[m]{a^n} = a^{\frac{n}{m}}$

2. $\sqrt[m]{\sqrt[n]{a}} = \sqrt[m \cdot n]{a}$

3. $\sqrt{a+\sqrt{b}} = \sqrt{\dfrac{a+\sqrt{a^2-b}}{2}} + \sqrt{\dfrac{a-\sqrt{a^2-b}}{2}}$

4. $\sqrt{a-\sqrt{b}} = \sqrt{\dfrac{a+\sqrt{a^2-b}}{2}} - \sqrt{\dfrac{a-\sqrt{a^2-b}}{2}}$

5. $x = \sqrt[n]{a \cdot \sqrt[n]{a \cdot \sqrt[n]{a \ldots\ldots}}} = \sqrt[n-1]{a}$

6. $x = \sqrt[n]{a : \sqrt[n]{a : \sqrt[n]{a \ldots\ldots}}} = \sqrt[n+1]{a}$

7. $a \cdot \sqrt[n]{x} + b \cdot \sqrt[n]{x} - c \cdot \sqrt[n]{x} = (a+b-c) \cdot \sqrt[n]{x}$

8. $\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{a \cdot b}$

   $\sqrt[n]{a} : \sqrt[n]{b} = \sqrt[n]{a:b}$

9. $$\frac{a}{\sqrt{b}} = \frac{a\cdot\sqrt{b}}{\sqrt{b}\cdot\sqrt{b}} = \frac{a\sqrt{b}}{b}$$

10. $$\frac{a}{\sqrt{b}+\sqrt{c}} = \frac{a\cdot(\sqrt{b}-\sqrt{c})}{b-c}$$

11. $$\frac{a}{b-\sqrt{c}} = \frac{a\cdot(b+\sqrt{c})}{b^2-c}$$

12. $$\sqrt{a+\sqrt{a+\sqrt{a+\ldots}}} = \frac{1+\sqrt{1+4a}}{2} \quad (a>0)$$

13. $$\sqrt{a-\sqrt{a-\sqrt{a-\ldots}}} = \frac{-1+\sqrt{1+4a}}{2} \quad (a\geq 0)$$

14. $$\frac{a}{b}\cdot\sqrt[n]{c} = \sqrt[n]{\frac{a^n\cdot c}{b^n}}$$

15. $$\sqrt[n]{a^m} = \sqrt[n\cdot r]{a^{m\cdot r}} = \sqrt[\frac{n}{r}]{a^{\frac{m}{r}}}$$

16. $$\sqrt{a(a+1)+\sqrt{a(a+1)+\sqrt{a(a+1)+\ldots}}} = a+1$$

$$\sqrt{a(a+1)-\sqrt{a(a+1)-\sqrt{a(a+1)-\ldots}}} = a$$

17. $$\left.\begin{array}{l} m+n=a \\ m\cdot n=b \end{array}\right\} \Rightarrow \sqrt{a+2\sqrt{b}} = \sqrt{m}+\sqrt{n}$$

$$\left.\begin{array}{l} m+n=a \\ m\cdot n=b \\ m>n \end{array}\right\} \Rightarrow \sqrt{a-2\sqrt{b}} = \sqrt{m}-\sqrt{n}$$

Örnek / Example YÖS / 2010

$$\frac{\sqrt{2,89}+\sqrt{2,25}}{\sqrt{1,21}-\sqrt{0,09}}=?$$

A) 5 B) 4 C) 3 D) 2 E) 1

Çözüm / Solution Yanıt / Answer **B**

$$\frac{\sqrt{2,89}+\sqrt{2,25}}{\sqrt{1,21}-\sqrt{0,09}}=\frac{1,7+1,5}{1,1-0,3}=\frac{3,2}{0,8}=4$$

Örnek / Example

$$\sqrt[3]{0,008}-2\sqrt{0,04}+0,4=?$$

A) 0,2 B) 0,4 C) 0,6 D) 4 E) 6

Çözüm / Solution Yanıt / Answer **A**

$$\sqrt[3]{0,008}-2\sqrt{0,04}+0,4=\sqrt[3]{(0,2)^3}-2\sqrt{(0,2)^2}+0,4$$

$$=0,2-0,4+0,4=0,2$$

Alıştırmalar/Exercises

Alıştırma / Exercise 1

1. $\dfrac{(-1)^2-(-2)^2-(-3)^3+1}{(-5)^2+(-2)^5+2}=?$

Yanıt / The answer is **−5**

2. $\dfrac{(-99)^0-(-5)^2-(-2)^5}{(-1)^8-(-1)^9-(1)^0}=?$

Yanıt / The answer is **8**

3. $(5^{-1}-2^{-2})^{-2}=?$

Yanıt / The answer is **400**

4. $\left[2^0+\left(\dfrac{3}{2}\right)^{-1}\right]^{-2}=?$

Yanıt / The answer is $\dfrac{9}{25}$

5. $\left[\left(-\dfrac{1}{2}\right)^3\cdot\left(-\dfrac{1}{2}\right)^{-4}\cdot(-2)^2\right]^2=?$

Yanıt / The answer is **64**

6. $\left(-\dfrac{2}{3}\right)-3\cdot(-2)^{-4}\cdot\left(-\dfrac{2}{3}\right)^2\cdot\left(-\dfrac{1}{2}\right)^{-5}=?$

Yanıt / The answer is **2**

7. $\dfrac{4^8+8^8}{2^8+4^8}=?$

Yanıt / The answer is 2^8

8. $\dfrac{2\cdot 6^{22}-10\cdot 6^{21}}{36^{10}}=?$

Yanıt / The answer is **12**

9. $(-2^4)^{-3}+(-2^{-2})^6+(2^{-1})^{12}=?$

Yanıt / The answer is 2^{-12}

10. $4^8+16^4+64^3+2^{18}+256^2=a\cdot 2^b$

$\Rightarrow a+b=?$

Yanıt / The answer is **27**

11. $2^{x+1}+2^{x+2}+2^{x+3}=112 \Rightarrow x=?$

Yanıt / The answer is **3**

12. $2^{x+4}-2^{x+2}=96 \Rightarrow x=?$

Yanıt / The answer is **3**

13. $2^x + 5^x + 7^x = 81$

$\Rightarrow \mathbf{6^x + 15^x + 21^x = ?}$

Yanıt / The answer is **3^{x+4}**

---

14. $\left.\begin{array}{l} 2^x + 3^x + 4^x = a \\ 4^x + 6^x + 8^x = 16a \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **4**

---

15. $2^{2a} - 1 = 3 \Rightarrow \dfrac{\mathbf{12^a + 48^a}}{\mathbf{3^a}} = \mathbf{?}$

Yanıt / The answer is **20**

---

16. $\dfrac{2^{x+1} \cdot 4^x}{8^{x+1} \cdot 2^x} = 64 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **–8**

---

17. $5^x = b \Rightarrow \mathbf{b^3 \cdot 5^{2-3x} = ?}$

Yanıt / The answer is **25**

---

18. $\dfrac{3^x + 3^x + 3^x}{3^x \cdot 3^x} = \dfrac{1}{81} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **5**

19. $7^{a+1} = 28^{a-1} \Rightarrow \mathbf{2^a = ?}$

Yanıt / The answer is **14**

20. $10^a = 2^{a+1} \Rightarrow \mathbf{5^{2a+1} = ?}$

Yanıt / The answer is **20**

21. $27^{1-2a} \cdot 9^a = 243^{-1} \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **2**

22. $9^x = 4$

$\Rightarrow \mathbf{3^x + 27^{x+1} = ?}$

Yanıt / The answer is **218**

23. $(b^x)^y = b^x \cdot b^y \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is $\mathbf{\dfrac{x}{x-1}}$

24. $8^{x+2} = 27 \Rightarrow \mathbf{2^{2x+6} = ?}$

Yanıt / The answer is **36**

1. $a, b \in N^+$

$16^{2a} = 64^{3b} \Rightarrow$ **$\min(a+b) = ?$**

Yanıt / The answer is **13**

---

2. $\dfrac{3}{3^{1-x}} = y \Rightarrow$ **$9^{x+1} = ?$**

Yanıt / The answer is **$9y^2$**

---

3. $\left(\dfrac{4}{25}\right)^a \cdot \left(\dfrac{5}{2}\right)^{a+1} = 6{,}25 \Rightarrow$ **$a = ?$**

Yanıt / The answer is **−1**

4. $2 \cdot 3^{x+1} - 6 \cdot 3^x + 5 \cdot 3^{x-2} = 405$

$\Rightarrow$ **$x = ?$**

Yanıt / The answer is **6**

---

5. $\dfrac{3^a - 2}{3^a} = \dfrac{1}{3} \Rightarrow$ **$4^{a+2} = ?$**

Yanıt / The answer is **64**

---

6. $36^{x-1} = 4 \Rightarrow$ **$6^x = ?$**

Yanıt / The answer is **12**

7. $\frac{1}{3^{x+3}} = 6 \Rightarrow \mathbf{? < x < ?}$

Yanıt / The answer is $\mathbf{-5 < x < -4}$

8. $3^{a-2} = x \Rightarrow \mathbf{3^{3-a} = ?}$

Yanıt / The answer is $\frac{3}{x}$

9. $2^{3x+1} = m \Rightarrow \mathbf{2^{6x-2} = ?}$

Yanıt / The answer is $\frac{m^2}{16}$

10. $\frac{2^{11} + 2^{12} + 2^{13} + 2^{14}}{2^{-9} + 2^{-8} + 2^{-7} + 2^{-6}} = ?$

Yanıt / The answer is 2^{20}

11. $\frac{2^{m-n}}{4^{n-m}} = ?$

Yanıt / The answer is 2^{3m-3}

12. $\frac{1}{2^{x-2}} \cdot \frac{2}{4^{1-x}} = ?$

Yanıt / The answer is 2^{1-}

13. $3^{x-1} \cdot 15^{1-x} = 25^{x+2} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **–1**

14. $\left.\begin{array}{r} a = 3^{3x-1} \\ b = 9^{x+1} \\ a^2 = b^2 \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **3**

15. $\mathbf{(2^m - 4^m) \cdot (1 - 2^{2m})^{-1} \cdot (4^m + 2{\cdot}2^m + 1) = ?}$

Yanıt / The answer is $\mathbf{2^m + 4^m}$

16. $\left.\begin{array}{r} a^2 = 2^{3x+8} \\ 4a = 8^{x+1} \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **2**

17. $\dfrac{15^{1-2x} \cdot 9^x}{25^{2-x}} = \dfrac{3^{1-x}}{125} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **0**

18. $\sqrt{\dfrac{5}{4^{x-1}} + 2^{4-2x}} = ?$

Yanıt / The answer is $\mathbf{\dfrac{6}{2^x}}$

19. $9^{x-1} + 9^{y} = 2\cdot 3^{x+y-1} \Rightarrow \mathbf{x - y = ?}$

Yanıt / The answer is **1**

20. $\left.\begin{array}{l} 5^{x} = 25 \\ x^{y} = \dfrac{1}{4} \end{array}\right\} \Rightarrow \mathbf{x - y^{x-y} = ?}$

Yanıt / The answer is **–14**

21. $(0,5)^{-x} + \dfrac{3}{2^{1-x}} = 20 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **3**

22. $20^{x} = 45$

$\Rightarrow \mathbf{5^{x-1}\cdot 2^{2x+1} = ?}$

Yanıt / The answer is **18**

23. $\dfrac{3^{x+1}+6}{9^{x}-4} = \dfrac{3}{7} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **2**

24. $2^{x+2} = 12$

$15^{y+1} = (125)^{2}\cdot(64)^{x} \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is **5**

1. $2^x - 3\cdot 2^x = A\cdot 3^{x-1}$

$$\left(\frac{2}{3}\right)^x = 4 \Rightarrow \mathbf{A = ?}$$

Yanıt / The answer is **−24**

---

2. $$\frac{2^a + 4^a + 8^a}{1 + 2^a + 4^a} = \frac{1}{4} \Rightarrow \mathbf{a^2 = ?}$$

Yanıt / The answer is **4**

---

3. $$2^{1-x} = 3 \Rightarrow \frac{2\cdot 3^{x+1}}{6^x} = ?$$

Yanıt / The answer is **9**

---

4. $$\left.\begin{matrix} 3^x = 25 \\ 3 = 5^y \end{matrix}\right\} \Rightarrow \mathbf{3^{xy+x} = ?}$$

Yanıt / The answer is **225**

---

5. $$\frac{3^{x+2} - 2\cdot 3^{x+1}}{3^x + 3^{x+1}} = \frac{x+2}{x-1} \Rightarrow \mathbf{x = ?}$$

Yanıt / The answer is **−11**

---

6. $(0,005)^5\cdot(0,04)^4 = A\cdot 10^x \Rightarrow$ **min(A) + x = ?**

Yanıt / The answer is **−10**

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7. $\left.\begin{aligned} 2^x &= 18 \\ 4^y &= 65 \\ 5^z &= 120 \end{aligned}\right\} \Rightarrow$ **? > ? > ?**

Yanıt / The answer is **x > y > z**

8. $\left.\begin{aligned} x^{y-1} &= 5 \\ x^y - 12 &= x \end{aligned}\right\} \Rightarrow$ **x = ?**

Yanıt / The answer is **3**

9. $x \in Z$,

$$\frac{2^{x+3} - 2^{x+2}}{2^{x-3} - 2^{x-4}} = x^y, \ \min(x) \Rightarrow \mathbf{x + y = ?}$$

Yanıt / The answer is **8**

10. $\left(\dfrac{0{,}0032}{0{,}0002}\right)^{a+2} = \dfrac{1}{256} \Rightarrow$ **a = ?**

Yanıt / The answer is **–4**

11. $\left.\begin{aligned} 2^x &= a \\ 3^x &= b \end{aligned}\right\} \Rightarrow$ **$108^x = ?$**

Yanıt / The answer is **a^2b^3**

12. $5^6 \cdot (250)^5 \cdot 625^8 = a \cdot 5^b \Rightarrow$ **min(a) + b = ?**

Yanıt / The answer is **85**

13. $(-24)^3 \cdot (-16^5) \cdot (-64)^8 = a \cdot 2^b$

$\Rightarrow$ **$b - \min(a) = ?$**

Yanıt / The answer is **50**

14. $\left(\frac{5}{3}\right)^{a-b} \cdot \left(\frac{3}{5}\right)^{-a} = \frac{81}{625} \Rightarrow$ **$2a - b = ?$**

Yanıt / The answer is **–4**

15. $\left.\begin{array}{l} 3^x \cdot 4^y = 72 \\ 4^x \cdot 3^y = 24 \end{array}\right\} \Rightarrow$ **$x + y = ?$**

Yanıt / The answer is **3**

16. $\left.\begin{array}{l} a^{a+b} = b^9 \\ b^{a+b} = b^3 a^{12} \end{array}\right\} \Rightarrow$ **$a + b = ?$**

Yanıt / The answer is **12**

17. $2^x + 2^{-x} = 3 \Rightarrow$ **$4^x + 4^{-x} = ?$**

Yanıt / The answer is **7**

18. $2^{2x-4} = 7^{y+1} = 3^{2z-2}$

$\Rightarrow$ **$x + y + z = ?$**

Yanıt / The answer is **2**

19. $\left.\begin{array}{l} 2^x = 5 \\ 2^y = 15 \end{array}\right\} \Rightarrow 2^{2x-y} = ?$

Yanıt / The answer is $\frac{5}{3}$

---

20. $\left.\begin{array}{l} 2^a = 9 \\ 27^b = 8 \end{array}\right\} \Rightarrow a \cdot b = ?$

Yanıt / The answer is **2**

---

21. $\left.\begin{array}{l} 3^x = 2 \\ 81^{x-1} = y^4 \end{array}\right\} \Rightarrow y = ?$

Yanıt / The answer is $\frac{2}{3}$

---

22. $\dfrac{7^{2x} - 1}{7^{x+1} + 7} = \dfrac{48}{7} \Rightarrow x = ?$

Yanıt / The answer is **2**

---

23. $\dfrac{3^x + 1}{3^{x+y} + 3^x + 3^y + 1} = \dfrac{1}{244} \Rightarrow y = ?$

Yanıt / The answer is **5**

---

24. $\dfrac{1}{3^{a-2}} + \dfrac{1}{3^{a-1}} = 4 \Rightarrow a = ?$

Yanıt / The answer is 1

1. $$\frac{3^a+9^a+15^a}{1+3^a+5^a}=81 \Rightarrow a=?$$

Yanıt / The answer is **4**

---

2. $$2^{x-1}=3,\ 4^{3y+1}=12 \Rightarrow \frac{x-1}{y}=?$$

Yanıt / The answer is **6**

---

3. $$\left.\begin{array}{l} 5^{2x-y}=125 \\ 2^{3x+y}=128 \end{array}\right\} \Rightarrow x+y=?$$

Yanıt / The answer is **3**

---

4. $$\left.\begin{array}{l} 3^x=4 \\ 9^y=2 \end{array}\right\} \Rightarrow \frac{x+y}{x-y}=?$$

Yanıt / The answer is $\frac{5}{3}$

---

5. $x^a=5\cdot x^2$,

$25\cdot 5^a=(x)^{b^2} \Rightarrow a^2-b^2=?$

Yanıt / The answer is **4**

---

6. $$\left.\begin{array}{l} \frac{a}{3}=b \\ a^{a+5}=b^{6b+10} \end{array}\right\} \Rightarrow 2a-b=?$$

Yanıt / The answer is **15**

7. $$\left.\begin{array}{l} 2^{x+y}=0{,}125 \\ (0{,}125)^{x-y}=2 \end{array}\right\} \Rightarrow x\cdot y=?$$

Yanıt / The answer is $\dfrac{20}{9}$

---

8. $$\left.\begin{array}{l} x=2+2^{a-1} \\ y=2-2^{a-1} \end{array}\right\} \Rightarrow y=?$$

Yanıt / The answer is **10 – 4x**

---

9. $$\frac{1+2^{x-y}}{1+2^{y-x}}=4 \Rightarrow x-y=?$$

Yanıt / The answer is **2**

---

10. $$\left.\begin{array}{l} a^{2}=2^{6x+4} \\ \dfrac{a}{4}=16^{x-2} \end{array}\right\} \Rightarrow x=?$$

Yanıt / The answer is **8**

---

11. $$\left.\begin{array}{l} x^{y+2}=a^{3} \\ x^{2-2y}=b^{3} \end{array}\right\} \Rightarrow x^{y}=?$$

Yanıt / The answer is $\dfrac{a}{b}$

---

12. $$\left.\begin{array}{l} 3^{a+b}=2 \\ 2^{a+b}=5 \end{array}\right\} \Rightarrow 36^{a-b}=?$$

Yanıt / The answer is **100**

13. $4 \cdot 3^{x+2} + 18 \cdot 2^{x+1} = a^2$ ve (and)

$2^x + 3^x = a \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **36**

14. $\left.\begin{array}{l} 3^a = 15^{a-1} \\ 6^a = 10^{a+1} \end{array}\right\} \Rightarrow \mathbf{3^a = ?}$

Yanıt / The answer is **150**

15. $\left.\begin{array}{l} 3^x = 15 \\ 5^y = 45 \end{array}\right\} \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is $\mathbf{\dfrac{x+1}{x-1}}$

16. $\left.\begin{array}{l} x = 3^n - 1 \\ y = 3^{-n} + 1 \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is $\mathbf{\dfrac{2-y}{y-1}}$

17. $\left.\begin{array}{l} \dfrac{a}{b} = 2 \\ \left(\dfrac{b}{a}\right)^{\frac{1}{x}} = 64 \end{array}\right\} \Rightarrow \mathbf{3^{6x} = ?}$

Yanıt / The answer is $\mathbf{\dfrac{1}{3}}$

18. $\left.\begin{array}{l} 4^x = 27 \\ 3^y = 512 \end{array}\right\} \Rightarrow \mathbf{x \cdot y = ?}$

Yanıt / The answer is $\mathbf{\dfrac{27}{2}}$

19. $\left.\begin{array}{l} 6^{n+1} = a \\ 6^{2-n} = b \end{array}\right\} \Rightarrow \mathbf{\dfrac{a \cdot b}{12} = ?}$

Yanıt / The answer is **18**

20. $3^{x+1} = 2^{x+1} \Rightarrow \mathbf{4^x + \dfrac{1}{4} = ?}$

Yanıt / The answer is $\mathbf{\dfrac{1}{2}}$

21. $2^{x+1} = 6^{x+1} \Rightarrow \mathbf{9^{x+2} = ?}$

Yanıt / The answer is **9**

22. $a, b \in N^+$,

$a^b = 81$,

$b^a = 64$

$\Rightarrow \mathbf{2a + 3b = ?}$

Yanıt / The answer is **18**

23. $2^{\frac{3}{2}} \cdot 3^{\frac{1}{2}} \cdot 6^{\frac{3}{2}} = a^b \cdot b^a \Rightarrow \mathbf{a + b = ?}$

Yanıt / The answer is **5**

24. $\left.\begin{array}{l} x^{m+n} = 54 \\ x^{m-n} = 6 \end{array}\right\} \Rightarrow \mathbf{\dfrac{x^m + x^n}{x^m - x^n}} = ?$

Yanıt / The answer is $\mathbf{\dfrac{7}{5}}$

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $(16)^0 + (-2)^3 - 1^2 + \left(\frac{1}{3}\right)^{-2} = ?$

A) –2 B) –1 C) 0 D) 1 E) 2

2. $(-3)^2 - (-2)^3 + (-5^2) - (-4)^2 = ?$

A) –24 B) –12 C) –10 D) –6 E) –2

3. $(x + y - 4)^6 + (x - y + 10)^6 = 0 \Rightarrow x \cdot y = ?$

A) –24 B) –21 C) –10 D) –8 E) –4

4. $4x^5 + 6x^5 - 8x^5 = 64 \Rightarrow x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $\frac{1}{3} \cdot 3^{a+1} + 9 \cdot 3^{a-1} - 27 \cdot 3^a - 3^a = x \cdot 3^{a+1} \Rightarrow x = ?$

A) –16 B) –8 C) –4 D) 2 E) 8

6. $x^{a-b} = x^7 \cdot y^{13}$

$y^{a-b} = x^{14} \cdot y^8$

$\Rightarrow a - b = ?$

A) 16 B) 18 C) 19 D) 21 E) 24

7. $\frac{2 \cdot 5^{x+1} + 5^{x-1} - 5^{x+2}}{5^{x-1}} = ?$

A) –80 B) –74 C) –70 D) –56 E) –40

8. $\frac{3^x + 6^x + 9^x}{5^x + 10^x + 15^x} = \frac{9}{25} \Rightarrow x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

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9. $\frac{5^{20}-5^{10}}{5^{5}-1}\cdot\frac{5^{-9}}{5^{5}+1}=?$

A) $\frac{1}{5}$ B) 5 C) 5^{2} D) 5^{3} E) 5^{4}

10. $\left(\frac{a^{-4}b^{2}}{a^{-1}b^{-4}}\right)^{0,\bar{3}}=?$

A) $\frac{1}{ab}$ B) $\frac{b^{2}}{a}$ C) $\frac{b}{a}$ D) $\frac{a^{2}}{b}$ E) ab^{2}

11. $\left.\begin{array}{l} a+b^{-1}=4^{-1} \\ b+a^{-1}=4 \end{array}\right\} \Rightarrow a^{-1}\cdot b=?$

A) $\frac{1}{16}$ B) $\frac{1}{4}$ C) 1 D) 4 E) 16

12. $\frac{0{,}7\cdot10^{-4}+0{,}08\cdot10^{-3}}{1{,}5\cdot10^{-4}}=?$

A) 0,01 B) 0,1 C) 1

D) 10 E) 15

13. $x^{y}=-2 \Rightarrow \frac{x^{2y}-x^{3y}}{x^{y}}=?$

A) –6 B) –2 C) –1

D) 1 E) 2

14. $3^{x-1}=2 \Rightarrow 3^{x+1}+3^{x-1}-3^{2x}=?$

A) –32 B) –16 C) –8

D) 8 E) 16

15. $\frac{1}{2+2^{a+1}}+\frac{1}{2+2^{1-a}}=?$

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 4

16. $2^{a}=x,\quad 3^{a}=y,\quad 5^{a}=z$

$\Rightarrow 900^{a}=?$

A) xyz B) $xy^{2}z$ C) xyz^{2}

D) $x^{2}y^{2}z^{2}$ E) $x^{2}y^{2}z$

Yanıtlar / Answers

1. D	4. B	7. B	10. B	13. A	16. D
2. A	5. B	8. B	11. E	14. B	
3. B	6. D	9. B	12. C	15. B	

1. $\dfrac{(-a)^8 \cdot (-a)^{-4} \cdot (-a^2)^3}{-a^4 \cdot (a)^5} = ?$

A) $-\dfrac{1}{a}$ B) $-a$ C) 1 D) a E) a^2

2. $3^a = k \Rightarrow \dfrac{81^{a+1}}{27} = ?$

A) $\dfrac{k^2}{3}$ B) $\dfrac{k^3}{3}$ C) $3k^3$ D) $4k^3$ E) $3k^4$

3. $(2x-9)^6 = (x-3)^6 \Rightarrow \sum x = ?$

A) 7 B) 8 C) 9 D) 10 E) 11

4. $(7x-12)^7 = (5x-2)^7 \Rightarrow \sum x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $\left.\begin{array}{l} 25^x = 4^y \\ 5^{x-1} = 2^{y+1} \end{array}\right\} \Rightarrow x = ?$

A) $-y$ B) $-\dfrac{1}{y}$ C) y D) $y+1$ E) $2y$

6. $\left.\begin{array}{l} 3^x = 4 \\ 3^y = 100 \end{array}\right\} \Rightarrow 0,2 = ?$

A) 3^{y-x} B) 3^{x-y} C) $3^{\frac{x-y}{2}}$

D) 3^{x+y} E) $3^{\frac{x+y}{2}}$

7. $\left.\begin{array}{l} x^a = 8 \\ 16^a = x^2 \end{array}\right\} \Rightarrow 4a^2 + 2 = ?$

A) 2 B) 4 C) 6 D) 8 E) 10

8. $\dfrac{125^{0,\bar{3}} + 49^{0,5}}{\left(\dfrac{1}{2}\right)^{-3} + (2^{16})^{4^{-1}}} = ?$

A) $\dfrac{1}{4}$ B) $\dfrac{1}{2}$ C) 1 D) 2 E) 4

9. $5^x = 3^y \Rightarrow \mathbf{5^{\frac{x}{y}} + 3^{\frac{y}{x}} = ?}$

A) 2 B) 3 C) 5 D) 8 E) 10

10. $a^{x-1} = b^x \Rightarrow \left(\frac{\mathbf{b}}{\mathbf{a}}\right)^{\mathbf{3-2x}} = \mathbf{?}$

A) $\frac{b}{a}$ B) $a^{-1}b^3$ C) $a^{-2}b^2$

D) $\frac{b^3}{a^2}$ E) a^2b^{-2}

11. $\left.\begin{array}{l} 3^x = 5 \\ 5^y = 10 \\ 10^z = 16 \end{array}\right\} \Rightarrow \mathbf{3^{xyz} = ?}$

A) 5 B) 7 C) 9 D) 12 E) 16

12. $x > 0$,

$\frac{x^{2a}-4}{x^a+2} : \frac{x^a-2}{x^4} = (0{,}2)^{-4} \Rightarrow \mathbf{x = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

13. $\dfrac{\left(-\frac{1}{3}\right)^4 (27)^{-2}(81)^4}{(-3^2)^3\cdot(-3^{-7})} = \mathbf{?}$

A) -3^2 B) -3 C) 3^4

D) 3^5 E) 3^7

14. $\dfrac{\mathbf{(-1905)^0 + (1917)^0}}{\mathbf{(-1923)^1 + (1929)}} = \mathbf{?}$

A) $\frac{1}{6}$ B) $\frac{1}{4}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$ E) 1

15. $(2x-5)^{x^2-4} = 1 \Rightarrow \mathbf{\sum x = ?}$

A) 2 B) 3 C) 4 D) 5 E) 6

16. $x \in Z$,

$(x+4)^{x^2-16} = 1 \Rightarrow \mathbf{\sum x = ?}$

A) -4 B) -2 C) 0

D) 1 E) 8

Yanıtlar / Answers

1. D	4. E	7. D	10. B	13. E	16. D
2. E	5. A	8. B	11. E	14. C	
3. D	6. C	9. D	12. E	15. B	

1. $(-3)^2 + 1^{100} - 4^2 = ?$

A) 6 B) 3 C) 1 D) –3 E) –6

2. $(-3)^3 + (-4)^2 + 3^2 - (-2)^3 = ?$

A) 2 B) 4 C) 6 D) 9 E) 12

3. $1^{2011} + (-2)^3 + (2012)^0 = ?$

A) –4 B) –5 C) –6 D) –8 E) –10

4. $(x - 4)^2 + (y + 3)^2 = 0 \Rightarrow x \cdot y = ?$

A) –12 B) –6 C) 0 D) 6 E) 12

5. $\dfrac{4^4 + 4^4 + 4^4 + 4^4}{16} = ?$

A) 1 B) 4 C) 16 D) 64 E) 128

6. $2^x + 2^x + 2^x + 2^x = 128 \Rightarrow x = ?$

A) 3 B) 4 C) 5 D) 6 E) 7

7. $\dfrac{3^{2x} \cdot 9}{3^{x-1}} = 81 \Rightarrow x = ?$

A) 5 B) 4 C) 3 D) 2 E) 1

8. $4 \cdot 2^x + 2 \cdot 2^x + 3 \cdot 2^x = 72 \Rightarrow x = ?$

A) 1 B) 3 C) 5 D) 7 E) 9

9. $3^{x+1} + 3^{x+3} + 3^{x+4} = 111 \Rightarrow \mathbf{x = ?}$

A) –2 B) –1 C) 0 D) 1 E) 2

10. $\dfrac{5^{x+2} + 5^{x+3} + 5^{x+4}}{5^{x} + 5^{x+1} + 5^{x+2}} = ?$

A) 0 B) 5 C) 15 D) 25 E) 50

11. $\dfrac{9^4 + 9^4 + 9^4 + 9^4 + 9^4 + 9^4}{3^3 + 3^3} = ?$

A) 3^3 B) 3^4 C) 3^6 D) 3^8 E) 3^{10}

12. $\left.\begin{aligned} 2^x &= a \\ 3^x &= b \end{aligned}\right\} \Rightarrow \mathbf{6^x = ?}$

A) $a \cdot b$ B) 2ab C) 3ab D) $\dfrac{ab}{2}$ E) $\dfrac{ab}{3}$

13. $\left.\begin{aligned} 2^a &= m \\ 5^a &= n \end{aligned}\right\} \Rightarrow \mathbf{20^a = ?}$

A) 2mn B) m^2n C) mn^2 D) m^2n^3 E) mn

14. $\dfrac{15^x + 15^x + 15^x}{5^x + 5^x} = 27 \Rightarrow \mathbf{3^x = ?}$

A) 3 B) 9 C) 18 D) 27 E) 36

15. $5^{x+1} = m \Rightarrow \mathbf{5^{x-1} = ?}$

A) m B) $\dfrac{m}{5}$ C) $\dfrac{m}{20}$ D) $\dfrac{m}{25}$ E) $\dfrac{m}{125}$

16. $\left.\begin{aligned} 2^{x-1} &= m \\ 3^{x+1} &= n \end{aligned}\right\} \Rightarrow \mathbf{6^x = ?}$

A) $\dfrac{mn}{3}$ B) $\dfrac{2mn}{3}$ C) mn D) $\dfrac{4mn}{3}$ E) $\dfrac{5mn}{3}$

Yanıtlar / Answers

1. E	4. A	7. E	10. D	13. B	16. B
2. C	5. D	8. B	11. C	14. C	
3. C	6. C	9. C	12. A	15. D	

1. $(x-5)^{x+3} = 1 \Rightarrow \sum \mathbf{x = ?}$

A) 3 B) 6 C) 7 D) 10 E) 13

2. $2^{x+3} \cdot 2^{x-2} \cdot 2^{2x-4} = 32 \Rightarrow \mathbf{x = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\dfrac{(-a)^6 \cdot (-a^4) \cdot (-a^2)^3}{(-a)^{10}} = ?$

A) $-a^6$ B) $-a^{-4}$ C) a^4 D) a^6 E) a^{10}

4. $2^x = m \Rightarrow \mathbf{16^{x+1} = ?}$

A) m^4 B) $2m^4$ C) $4m^4$ D) $8m^4$ E) $16m^4$

5. $2^x = a,\ 3^x = b,\ 5^x = c \Rightarrow \mathbf{18 \cdot (90)^{x-1} = ?}$

A) $\dfrac{abc}{5}$ B) $\dfrac{ab^2c}{4}$ C) $\dfrac{ab^2c}{5}$

D) $\dfrac{a^2bc}{4}$ E) $\dfrac{a^2bc}{5}$

6. $2^x = a,\ 3^x = b,\ 5^x = c \Rightarrow \mathbf{(14{,}4)^x = ?}$

A) $\dfrac{a^3b^2}{c}$ B) $\dfrac{a^2b^3}{c}$ C) $\dfrac{ab^2}{c}$

D) $\dfrac{a^4b^2}{c}$ E) $\dfrac{a^3b}{c}$

7. $\dfrac{4^{3x-2y+1}}{8^{2x-y}} = 16 \Rightarrow \mathbf{y = ?}$

A) −4 B) −2 C) 2 D) 4 E) 6

8. $x, y, m \in Z^+$,

$\dfrac{9^{10}+9^{10}+9^{10}+9^{10}}{3^7+3^7} = x \cdot y^m \Rightarrow \mathbf{min(x+y+m) = ?}$

A) 13 B) 14 C) 16 D) 17 E) 18

9. $5^{2x-1} = 125^{x+4} \Rightarrow$ **x = ?**

A) –13 B) –9 C) –5 D) 5 E) 9

10. $5^{x} + 2 \cdot 5^{x} + 5^{x+2} = 700 \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

11. $\left(\frac{11}{2}\right)^{x-11} = \left(0,\overline{18}\right)^{3x-5} \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

12. $(5x - 4)^5 = (2x + 23)^5 \Rightarrow \sum$**x = ?**

A) 3 B) 6 C) 9 D) 12 E) 5

13. $(2x + 5)^4 = (3x - 25)^4 \Rightarrow \sum$**x = ?**

A) 26 B) 30 C) 34 D) 38 E) 40

14. $(x - 3)^{x+5} = 1 \Rightarrow \sum$**x = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

15. $(x - 2)^{x^2-4} = 1 \Rightarrow \sum$**x = ?**

A) –2 B) –1 C) 1 D) 2 E) 4

16. $x \in Z^+$,

$$\left(\frac{1}{5}\right)^{3x-1} > \left(\frac{1}{5}\right)^{2x+9} \Rightarrow \sum x = ?$$

A) 10 B) 22 C) 36 D) 45 E) 55

Yanıtlar / Answers

1. A	**4. E**	**7. B**	**10. B**	**13. C**	**16. D**
2. B	**5. C**	**8. E**	**11. D**	**14. B**	
3. D	**6. A**	**9. A**	**12. C**	**15. C**	

1. $32^{x}=\left(\frac{1}{16}\right)^{2} \Rightarrow$ **x = ?**

A) -2 B) $\frac{1}{2}$ C) $-\frac{8}{5}$ D) $\frac{3}{2}$ E) 2

2. $-\left(\frac{2}{3}\right)^{2}:\left(-\frac{2}{3}\right)^{4}=$**?**

A) $-\frac{3}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{2}$ D) $-\frac{27}{8}$ E) $-\frac{9}{4}$

3. $\left.\begin{array}{l} 9^{x-1}=3^{-x+4} \\ 4^{x-2y}=8^{\frac{x}{2}+y} \end{array}\right\} \Rightarrow$ **y = ?**

A) 1 B) -1 C) $\frac{1}{7}$ D) $\frac{5}{8}$ E) 0

4. $\frac{-4^{2}:(0{,}04)^{2}}{2^{x-3}}=-(800)^{2} \Rightarrow$ **x = ?**

A) -3 B) 1 C) 0 D) 7 E) 9

5. $\frac{1}{2^{1-a}-1}+\frac{1}{2^{a-1}-1}=$**?**

A) 1 B) 2^{a} C) 2^{a-1} D) -1 E) $2^{a}-1$

6. $-(-2)^{3}-(2)^{4}+(-2)^{2}=$ **?**

A) 12 B) 20 C) -12 D) -4 E) 8

7. $\left.\begin{array}{l} 16^{x+4}=81y^{4} \\ 6^{x}=12 \\ 3^{-x}=k\cdot y \end{array}\right\} \Rightarrow$ **k = ?**

A) $\frac{1}{3}$ B) $\frac{1}{4}$ C) $\frac{1}{9}$ D) $\frac{1}{16}$ E) $\frac{1}{64}$

8. $\left.\begin{array}{l} x^{a}=64 \\ x^{b}=4 \end{array}\right\} \Rightarrow \frac{a}{b}=$**?**

A) 1 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) 2 E) 3

9. $3^{2x} = 4 \Rightarrow \mathbf{3^{4x+3} = ?}$

A) 396 B) 408 C) 416 D) 432 E) 440

10. $(0{,}2)^{x-3} = 25^x \Rightarrow \mathbf{x = ?}$

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) $\frac{3}{2}$ E) 2

11. $\frac{3^x + 3^x + 3^x + 3^x}{6^x + 6^x + 6^x} = \frac{64}{3} \Rightarrow \mathbf{x = ?}$

A) 3 B) 2 C) 0 D) –2 E) –4

12. $3^x + 2 \cdot 3^{x-1} - 9 \cdot 3^{x-2} = 162 \Rightarrow \mathbf{x = ?}$

A) 6 B) 5 C) 4 D) 2 E) 1

13. $\left.\begin{array}{l} x = (2^3)^4 \\ y = (2)^{4^3} \\ z = (2)^{3^4} \end{array}\right\} \Rightarrow \mathbf{? < ? < ?}$

A) x = y = z B) x < y < z C) y < x < z

D) z < x < y E) x < z < y

14. $\frac{2 \cdot 10^x}{480 \cdot 10^3} = \frac{1}{2{,}4 \cdot 10^{-3}} \Rightarrow \mathbf{x = ?}$

A) 8 B) 7 C) 6 D) 5 E) 4

15. $\left.\begin{array}{l} 2^{a-1} = x \\ 5^{a+2} = y \end{array}\right\} \Rightarrow \mathbf{10^a = ?}$

A) $\frac{xy}{5}$ B) $\frac{3xy}{4}$ C) $\frac{xy}{2}$

D) $\frac{2xy}{9}$ E) $\frac{2xy}{25}$

16. $\frac{2 \cdot 4^{3x+1}}{8^x} = \left(\frac{1}{16}\right)^3 \Rightarrow \mathbf{x = ?}$

A) –9 B) –5 C) 0 D) 3 E) 12

Yanıtlar / Answers

1. C	**4. A**	**7. E**	**10. C**	**13. B**	**16. B**
2. E	**5. D**	**8. E**	**11. E**	**14. A**	
3. C	**6. D**	**9. D**	**12. B**	**15. E**	

1. $\dfrac{\left(-\dfrac{1}{2}\right)^3 \cdot \left(-2^4\right)}{(-2)^4 \cdot (4)^{-1}} = ?$

A) $\dfrac{1}{4}$ B) $\dfrac{1}{2}$ C) 1 D) − 2 E) − 4

2. $\dfrac{(125)^3 \cdot 12^2}{10^5 \cdot 15^3} = ?$

A) $\dfrac{5}{6}$ B) $\dfrac{5}{12}$ C) $\dfrac{10}{3}$

D) $\dfrac{15}{2}$ E) $\dfrac{25}{6}$

3. $5^{x-1} = 2 \Rightarrow 25^{x+1} = ?$

A) 25 B) 125 C) 225 D) 625 E) 2500

4. $\dfrac{8^{2x+1}}{4^{3x-1}} = ?$

A) 2 B) 4 C) 8 D) 16 E) 32

5. $2^{x-1} \cdot 3^{x+1} = A \Rightarrow 6^{x-2} = ?$

A) $\dfrac{A}{54}$ B) $\dfrac{A}{36}$ C) $\dfrac{A}{12}$

D) 12A E) 36A

6. $\dfrac{3^{x+1} + 3^x}{6 \cdot 3^{x-2}} + \dfrac{5^x - 5^{x-1}}{5^{x-2}} = ?$

A) 24 B) 26 C) 27 D) 32 E) 36

7. $\dfrac{12^{x-1}}{2^{4-2x}} = \dfrac{3^{x+2}}{27} \Rightarrow x = ?$

A) $\dfrac{1}{2}$ B) 1 C) $\dfrac{3}{2}$ D) 2 E) $\dfrac{5}{2}$

8. $\dfrac{5^{x-2}}{2^y \cdot 3^y} = \dfrac{30}{6^{y+1}} \Rightarrow x = ?$

A) 1 B) $\dfrac{3}{2}$ C) 2 D) $\dfrac{5}{2}$ E) 3

9. $x \in R$,

$(x^2 + 2)^{x^2-2x} = 1 \Rightarrow \sum \mathbf{x} = ?$

A) -2 B) -1 C) 0 D) 1 E) 2

10. $$\frac{(-3)^{-2} \cdot (-3^6) \cdot (-3)^{-3}}{(3^{-1})^3} = ?$$

A) $\frac{1}{9}$ B) $\frac{1}{3}$ C) 27 D) 81 E) 243

11. $$\frac{(-a^4) \cdot (a)^{-3} \cdot (-a)^{-6}}{(-a^{-1})^5 \cdot (-a)^{-3}} = ?$$

A) $-a^3$ B) $-a$ C) a^{-3} D) a^{-5} E) a^{-9}

12. $$\frac{(0,\overline{3})^4 \cdot (0,1\overline{6})^{-3}}{(27^{-1}) \cdot (12)^2} = ?$$

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 2 D) 6 E) 12

13. $$\frac{0,3 \cdot 10^{-5} + 0,05 \cdot 10^{-4}}{16 \cdot 10^{-6}} = ?$$

A) 2^{-2} B) 2^{-1} C) 2 D) 2^2 E) 2^3

14. $$\left(3^{-1} - 7^0\right)^{-2} \cdot \left(\frac{3}{4}\right)^{-3} = ?$$

A) $\frac{2}{3}$ B) $\frac{4}{9}$ C) $\frac{8}{3}$ D) $\frac{16}{3}$ E) $\frac{8}{9}$

15. $$\frac{(-1)^{1881} - 1^{1938} - (-1)^{1955}}{1^{1923} - (3)^{-1}} = ?$$

A) -1 B) $-\frac{1}{2}$ C) $-\frac{3}{2}$ D) $\frac{1}{2}$ E) $\frac{3}{2}$

16. $2^{x-2} = a \Rightarrow \mathbf{8^{x-2} = ?}$

A) a B) a^3 C) $2a$ D) $2a^3$ E) $8a^3$

Yanıtlar / Answers

1. B	**4. E**	**7. C**	**10. D**	**13. B**	**16. B**
2. A	**5. A**	**8. E**	**11. A**	**14. D**	
3. E	**6. B**	**9. E**	**12. B**	**15. C**	

1. $5^x = y \Rightarrow \mathbf{y^3 \cdot 5^{2-3x} = ?}$

A) 5 B) 10 C) 15

D) 25 E) 50

2. $\left.\begin{array}{l} 2^{2x} = 49 \\ 2^y = 7 \end{array}\right\} \Rightarrow \dfrac{\mathbf{x+2y}}{\mathbf{3y-x}} = \mathbf{?}$

A) $\frac{1}{2}$ B) 1 C) $\frac{3}{2}$

D) 2 E) $\frac{5}{2}$

3. $\left.\begin{array}{l} 3^a \cdot 4^b = 12 \\ 4^a \cdot 3^b = 144 \end{array}\right\} \Rightarrow \mathbf{a+b=?}$

A) 1 B) 3 C) 5

D) 7 E) 11

4. $\left.\begin{array}{l} m = 2^x \\ n = 5^{2x+1} \end{array}\right\} \Rightarrow \mathbf{(0{,}08)^x = ?}$

A) $\frac{m}{n}$ B) $\frac{5m}{n}$ C) $\frac{5n}{m}$

D) 5m E) 5n

5. $\left.\begin{array}{l} 2^x = m \\ 3^x = n \end{array}\right\} \Rightarrow \mathbf{192^x = ?}$

A) m^6n B) m^5n^2 C) m^4n^3

D) m^3n^4 E) m^2n^5

6. $\dfrac{12^n + 12^n + 12^n}{6^n + 6^n + 6^n + 6^n + 6^n + 6^n} = 64 \Rightarrow \mathbf{n = ?}$

A) 1 B) 3 C) 5

D) 7 E) 9

7. $5^{x+2} = 7^{2y-6} = 3^{z-2} \Rightarrow \mathbf{x + y + z = ?}$

A) 1 B) 2 C) 3

D) 4 E) 5

8. $\left.\begin{array}{l} x = 2^{m-1} \\ 4x = 16^{\frac{m}{2}-2} \end{array}\right\} \Rightarrow \mathbf{m = ?}$

A) 9 B) 8 C) 6

D) 4 E) 2

9. $\dfrac{8\cdot 4^{x-1}}{2^{3x+2}} = 16 \Rightarrow \mathbf{x = ?}$

A) −7 B) −5 C) −3

D) 1 E) 3

10. $\dfrac{2^x + 2^x + 2^x + 2^x}{(0,4)^x + (0,4)^x} = 50 \Rightarrow \mathbf{x = ?}$

A) 1 B) $\frac{3}{2}$ C) 2

D) $\frac{5}{2}$ E) 3

11. $A = 3^x + 3^{-x}$,
$B = 9^x + 9^{-x} \Rightarrow \mathbf{B = ?}$

A) $A^2 - 1$ B) $A^2 - 2$ C) $A^2 - 3$

D) $A^2 - 4$ E) $A^2 - 6$

12. $(x-3)^{x^2-9} = 1,\quad x \in Z \Rightarrow \mathbf{\sum x = ?}$

A) 1 B) 2 C) 3

D) 4 E) 5

13. $\left.\begin{array}{l} 4^{x-1} = 2^{-x+4} \\ 9^{x-2y} = 27^{\frac{x}{2}+y} \end{array}\right\} \Rightarrow \mathbf{y = ?}$

A) $-\frac{1}{7}$ B) $-\frac{1}{3}$ C) $\frac{1}{3}$

D) $\frac{1}{7}$ E) $\frac{1}{14}$

14. $\mathbf{-2^{-6} : \left(-\frac{1}{2}\right)^{-3} = ?}$

A) 2^{-7} B) 2^{-8} C) 2^{-9}

D) 2^{-10} E) 2^{-11}

15. $\mathbf{\dfrac{32^{-1}\cdot 128^{10}\cdot 3}{96\cdot 64^{10}} = ?}$

A) −2 B) $-\frac{1}{2}$ C) 1

D) $\frac{1}{2}$ E) 2

16. $x, n \in N^+$,
$25^{12}\cdot 4^{11} = x\cdot 10^n \Rightarrow \mathbf{n + x = ?}$

A) 41 B) 43 C) 45

D) 47 E) 49

Yanıtlar / Answers

1. D	4. B	7. C	10. C	13. D	16. D
2. C	5. A	8. A	11. B	14. C	
3. B	6. D	9. B	12. A	15. C	

1. $\dfrac{(-a)^3 \cdot (-a^6) \cdot (-a)^{-4}}{(-a^{-2})^{-3} \cdot (a^3)^{-1}} = ?$

A) $-a^6$ B) $-a^4$ C) $-a^2$ D) a^2 E) a^4

2. $2^{x-2} = 3 \Rightarrow \mathbf{4^{x+1} = ?}$

A) 144 B) 180 C) 240 D) 480 E) 576

3. $5^{2x+1} = 80 \Rightarrow \mathbf{25^{x-1} = ?}$

A) $\dfrac{4}{25}$ B) $\dfrac{16}{25}$ C) $\dfrac{25}{16}$ D) $\dfrac{25}{4}$ E) 25

4. $\dfrac{3^{x-2} + 3^{x+1}}{2 \cdot 3^{x-1} - 3^x} = ?$

A) $-\dfrac{28}{3}$ B) $-\dfrac{26}{3}$ C) $-\dfrac{17}{3}$ D) $\dfrac{17}{3}$ E) $\dfrac{26}{3}$

5. $5^x = 81,\ 5^y = 3 \Rightarrow \dfrac{3x - y}{2x - 3y} = ?$

A) $\dfrac{7}{3}$ B) $\dfrac{8}{5}$ C) $\dfrac{11}{5}$ D) $\dfrac{13}{3}$ E) $\dfrac{12}{5}$

6. $81^x = 8,\ 32^y = 9 \Rightarrow \mathbf{y = ?}$

A) $\dfrac{1}{10x}$ B) $\dfrac{3}{10x}$ C) $\dfrac{7}{10x}$ D) $\dfrac{x}{10}$ E) $\dfrac{3x}{10}$

7. $x \in Z$,

$\left(\dfrac{2}{3}\right)^{3x-5} < \left(\dfrac{2}{3}\right)^{2x-17} \Rightarrow \mathbf{min(x) = ?}$

A) –11 B) –12 C) –13 D) –14 E) –15

8. $(x + 3)^{x^2-4} = 1$,

$ÇK(SS) = \{x_1, x_2, x_3\} \Rightarrow \sum \mathbf{x = ?}$

A) –4 B) –2 C) 0 D) 2 E) 4

9. a = −3 ve b = $-\frac{1}{2}$ ⇒ $\mathbf{b^a + a^{-(b)^{-1}} = ?}$

A) $-\frac{1}{3}$ B) $-\frac{1}{2}$ C) -1

D) 1 E) $\frac{1}{2}$

10. $3^x = 2 \Rightarrow \mathbf{27^x + 9^{x+1} = ?}$

A) 36 B) 42 C) 44 D) 46 E) 52

11. $\dfrac{\mathbf{4 \cdot 3^x - 2 \cdot 3^{x-2}}}{\mathbf{3^x - 3^{x-1}}} = \mathbf{?}$

A) $\frac{17}{2}$ B) $\frac{19}{2}$ C) $\frac{23}{2}$

D) $\frac{17}{3}$ E) $\frac{19}{3}$

12. $9^{x+2} = 27^{x-1} \Rightarrow \mathbf{5^{x-5} = ?}$

A) $\frac{1}{25}$ B) $\frac{1}{5}$ C) 5 D) 25 E) 125

13. $(0,6)^{2x-8} = \left(\frac{5}{3}\right)^{3x-2} \Rightarrow \mathbf{2^{-x+1} + 3^x = ?}$

A) $\frac{17}{2}$ B) $\frac{19}{2}$ C) $\frac{21}{2}$

D) $\frac{23}{2}$ E) $\frac{25}{2}$

14. $\left.\begin{array}{l} 2^x = 18 \\ 3^y = 49 \\ 5^z = 81 \end{array}\right\} \Rightarrow \quad ? < ? < ?$

A) x < y < z B) y < z < x

C) z < y < x D) x < z < y

E) z < x < y

15. $\left.\begin{array}{l} 2^x \cdot 3^y = 54 \\ 3^x \cdot 2^y = 4 \end{array}\right\} \Rightarrow \mathbf{x + y = ?}$

A) 1 B) 2 C) 3 D) 4 E) 6

16. $\mathbf{(4^{0,72} : 2) = ?}$

A) $2^{1,44}$ B) $2^{0,72}$ C) $2^{0,44}$ D) $2^{0,22}$ E) $2^{0,11}$

Yanıtlar / Answers

1. C	**4. A**	**7. A**	**10. C**	**13. B**	**16. C**
2. E	**5. C**	**8. A**	**11. D**	**14. C**	
3. B	**6. B**	**9. D**	**12. D**	**15. C**	

1. $\left(\frac{1}{8}\right)^{-0,\bar{3}} = ?$

A) –0,1 B) 0,5 C) 1
D) 2 E) 10

2. $3^{(2^3)} = k \cdot (3^2)^3 \Rightarrow \mathbf{k = ?}$

A) $\frac{1}{9}$ B) 1 C) 2
D) 3 E) 9

3. $\mathbf{(-x^{-1})^{-2} \cdot (-x^{-2})^{-1} \cdot (-x^3)^{-1} = ?}$

A) –1 B) 1 C) x^{-1}
D) x E) x^2

4. $7^{-x} = 2 \Rightarrow \mathbf{7^{x+1} = ?}$

A) 1,5 B) 2,5 C) 3, 5
D) 4, 5 E) 5, 5

5. $\frac{3^{a+3} - 3^{a+2}}{3^{a+4} - 3^{a+2}} = ?$

A) $\frac{1}{4}$ B) $\frac{1}{3}$ C) $\frac{1}{2}$
D) 2 E) 4

6. $\frac{3^n + 3^n + 3^n}{5^n + 5^n + 5^n + 5^n + 5^n} = \left(\frac{5}{3}\right)^{\frac{1}{3}} \Rightarrow \mathbf{n = ?}$

A) $-\frac{4}{3}$ B) $-\frac{3}{4}$ C) $-\frac{2}{5}$
D) $\frac{4}{5}$ E) $\frac{3}{4}$

7. $(a-1)^{a-1} = 1 \Rightarrow \mathbf{\sum a = ?}$

A) 1 B) 2 C) 3
D) 4 E) 5

8. $\left.\begin{array}{l} x^a \cdot y^a = 3 \\ \dfrac{x^a}{y^a} = 3 \end{array}\right\} \Rightarrow \mathbf{x^a - y^a = ?}$

A) –3 B) 0 C) 1
D) 2 E) 3

9. $3^{-1} \cdot 3^{2} \cdot 3^{-3} \cdot 3^{4} \cdot \ldots\ldots \cdot 3^{-19} \cdot 3^{20} = ?$

A) 3^5 B) 3^8 C) 3^{10} D) 3^{12} E) 3^{15}

10. $3^{x-3} = m \Rightarrow 3^{2-x} = ?$

A) $\frac{3}{m}$ B) $3m$ C) $\frac{1}{9m}$ D) $\frac{1}{3m}$ E) $9m$

11. $A = \frac{2^x + 2^x + 2^x}{6^x + 6^x + 6^x} \Rightarrow A = ?$

A) 2^{-x} B) 3^{-x} C) 1 D) 2^x E) 3^x

12. $\left(\frac{x^x}{y^y}\right)^{a-b} \cdot \left(\frac{y^y}{x^{x+y}}\right)^{a-b} = ?$

A) 1 B) x^y C) x^{a-b} D) x^{a-by} E) x^{yb-ya}

13. $(2x-1)^{16} = (x+2)^{16} \Rightarrow \prod x = ?$

A) -3 B) -2 C) -1 D) 1 E) 3

14. $m, n \in N^+$,
$x^{2m} = y^5$,
$x^{3n} = y$,
$m \cdot n = 30 \Rightarrow m + n = ?$

A) 19 B) 17 C) 7 D) 3 E) 1

15. $6^{1-\frac{1}{a}} = 3 \Rightarrow 2^a = ?$

A) 6 B) 3 C) 2 D) $\frac{3}{2}$ E) 1

16. $x > 0$,

$$\left.\begin{array}{l} x^{a+b} = 9 \\ x^{a-b} = 4 \end{array}\right\} \Rightarrow x^a + x^b = ?$$

A) $\frac{13}{2}$ B) $\frac{15}{2}$ C) $\frac{17}{2}$ D) $\frac{19}{2}$ E) $\frac{21}{2}$

Yanıtlar / Answers

1. D	4. C	7. B	10. D	13. C	16. B
2. E	5. A	8. D	11. B	14. B	
3. D	6. A	9. C	12. E	15. A	

1. $5^{a-2} = 3^{2b+1} = 2^{4c-1} \Rightarrow \mathbf{a - 3b + 2c = ?}$

A) $\frac{5}{6}$ B) $\frac{1}{6}$ C) $\frac{1}{2}$ D) 2 E) 4

2. $\frac{7,2 \cdot 10^{3} \cdot 0,3 \cdot 10^{-2}}{8 \cdot 10^{-3}} = A \cdot 10^{n} \Rightarrow \mathbf{A + n = ?}$

A) 23 B) 25 C) 27 D) 29 E) 32

3. $\frac{\mathbf{3^{x} \cdot 4^{x}}}{\mathbf{3^{x-2} \cdot 2^{2x+1}}} = \mathbf{?}$

A) $\frac{9}{2}$ B) $\frac{7}{2}$ C) $\frac{5}{2}$

D) $\frac{3}{2}$ E) $\frac{1}{2}$

4. $5^{x+1} = 3 \Rightarrow \mathbf{5^{2x+3} = ?}$

A) 27 B) 36 C) 40 D) 45 E) 54

5. $x^{m} = y^{m+1} \Rightarrow \left(\frac{\mathbf{x}}{\mathbf{y}}\right)^{\mathbf{2m+1}} = \mathbf{?}$

A) y^{2} B) $\frac{x^{2}}{y}$ C) $\frac{y^{2}}{x}$

D) $x \cdot y$ E) $\frac{12}{5}$

6. $\frac{5^{x} + 10^{x} + 25^{x}}{5^{x} + 2^{x} + 1} = 125 \Rightarrow \mathbf{2^{x+1} = ?}$

A) $\frac{1}{2}$ B) 2 C) 4 D) 8 E) 16

7. $75^{12} = 9^{x} \cdot 25^{12} \Rightarrow \mathbf{2^{x} \cdot 7^{x-6} = ?}$

A) 16 B) 32 C) 64 D) 128 E) 256

8. $\frac{\mathbf{0,003 \cdot 10^{27} + 0,5 \cdot 10^{25}}}{\mathbf{0,02 \cdot 10^{26}}} = \mathbf{?}$

A) 2 B) 4 C) 6 D) 8 E) 10

9. $\left.\begin{array}{l} 2^x = 3 \\ 3^y = 25 \\ 5^z = 32 \end{array}\right\} \Rightarrow \mathbf{x \cdot y \cdot z = ?}$

A) 4 B) 9 C) 10 D) 28 E) 36

10. $\dfrac{3^{x-1}}{5^{3-x}+1}+\dfrac{3^{x-1}}{5^{x-3}+1}=27 \Rightarrow \mathbf{x = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

11. $\left.\begin{array}{l} a \cdot b = a^b \\ \dfrac{a^2}{b} = a^{3b} \end{array}\right\} \Rightarrow \mathbf{b = ?}$

A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{4}$

D) $\frac{4}{3}$ E) $\frac{3}{2}$

12. $\left.\begin{array}{l} x = 3^{54} \\ y = 5^{36} \\ z = 2^{72} \end{array}\right\} \Rightarrow \mathbf{? < ? < ?}$

A) $y < x < z$ B) $y < z < x$

C) $x < y < z$ D) $z < y < x$

E) $z < x < y$

13. $5^{x+1} + 5^x = 48$

$25^x = 32^y \Rightarrow \mathbf{y = ?}$

A) $\frac{5}{6}$ B) $\frac{6}{5}$ C) $\frac{8}{5}$

D) $\frac{5}{8}$ E) $\frac{3}{5}$

14. $2^{1-2x} = \dfrac{2}{9} \Rightarrow \mathbf{\dfrac{4 \cdot 3^{x+2}}{6^{x+1}} = ?}$

A) -1 B) $-\frac{1}{2}$ C) $\frac{1}{2}$ D) 1 E) 2

15. $\dfrac{2^x+2^{-x}}{1+4^x} = 64 \Rightarrow \mathbf{3^{x+4} = ?}$

A) $\frac{1}{9}$ B) $\frac{1}{3}$ C) 3 D) 9 E) 27

16. $\dfrac{5^{19}-5^7}{(5^6+1).(5^6-1)} = ?$

A) 1 B) 5 C) 5^5 D) 5^7 E) 5^{12}

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. E	**4. D**	**7. C**	**10. D**	**13. B**	**16. D**
2. D	**5. D**	**8. B**	**11. C**	**14. E**	
3. A	**6. E**	**9. C**	**12. D**	**15. A**	

1. $8^x + 8^x + 8^x + 8^x = 8^y \cdot 8^y \cdot 8^y \Rightarrow \dfrac{x}{9y-2} = ?$

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

2. $(0,\overline{3})^{x+1} = m \Rightarrow 9^{x+2} = ?$

A) $\frac{1}{m^2}$ B) $\frac{3}{m^2}$ C) $\frac{9}{m^2}$ D) $\frac{27}{m^2}$ E) $\frac{81}{m^2}$

3. $7^{x-9} = 14^{x-10} \Rightarrow 4^{x-11} = ?$

A) $\frac{7}{2}$ B) $\frac{7}{4}$ C) $\frac{7}{8}$ D) $\frac{49}{2}$ E) $\frac{49}{4}$

4. $\left(\underbrace{8^9 + 8^9 + 8^9 + \ldots + 8^9}_{32\text{tane}}\right) : 4^4 \cdot 4^4 \cdot 4^4 \cdot 4^4 = ?$

A) 1 B) 2 C) 4 D) 8 E) 16

5. $\left.\begin{array}{l} 5^x = 27 \\ 81 = 25^y \end{array}\right\} \Rightarrow \dfrac{3x+y}{x-2y} = ?$

A) –13 B) –12 C) –11 D) –9 E) –7

6. $(2x-9)^{2012} = (x-3)^{2012} \Rightarrow \sum x = ?$

A) 4 B) 5 C) 6 D) 8 E) 10

7. $(x+2)^{x^2-x-6} = 1 \Rightarrow \sum x = ?$

A) –2 B) –1 C) 0 D) 1 E) 2

8. $3^{1-x} - \dfrac{5}{3^{x-1}} = -108 \Rightarrow x = ?$

A) –2 B) –1 C) 2 D) 4 E) 6

9. $\dfrac{2^{x+1}+5\cdot 2^{x-1}+3\cdot 2^{x-2}}{2^{x+2}+\dfrac{1}{5}\cdot 2^{x}}=?$

A) $\dfrac{2}{5}$ B) $\dfrac{4}{5}$ C) $\dfrac{5}{2}$

D) $\dfrac{5}{4}$ E) $\dfrac{1}{5}$

10. $\dfrac{5^{x}}{3}+5^{x+1}-5^{x}\cdot 2=\dfrac{250}{3}\Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

11. $x^{x}=2^{24},\ y^{y}=3^{18}\Rightarrow \dfrac{2y+3x}{y-x}=?$

A) 17 B) 23 C) 32 D) 36 E) 42

12. $\left[\dfrac{x^{a-b}}{x^{-b}}\right]^{b}:\left[\dfrac{x^{b-a}}{x^{-a}}\right]^{a}=?$

A) x^{a} B) x^{b} C) 1 D) x E) $\dfrac{1}{x}$

13. A, n ∈ N,

$(32)^{6}\cdot(125)^{9}=A\cdot 10^{n}\Rightarrow$ **min(A + n) = ?**

A) 32 B) 35 C) 38 D) 40 E) 45

14. $a=1+x^{-1},\ b=1-x^{-2}\Rightarrow \left(\dfrac{a}{b}\right)^{-1}=?$

A) $\dfrac{x}{x-1}$ B) $\dfrac{x}{x+1}$ C) $\dfrac{x-1}{x}$

D) $\dfrac{x+1}{x}$ E) $\dfrac{1}{x^{2}}$

15. $9^{x+\frac{1}{2}}=48\Rightarrow 27^{x-\frac{2}{3}}=?$

A) $\dfrac{64}{9}$ B) $\dfrac{32}{3}$ C) $\dfrac{27}{2}$

D) $\dfrac{81}{4}$ E) $\dfrac{81}{2}$

16. $\dfrac{2^{x-1}+1}{1-2^{x+1}}=\dfrac{9}{4}\Rightarrow x=?$

A) –3 B) –2 C) –1

D) 0 E) 2

[İSTANBUL ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. A	**4. A**	**7. B**	**10. B**	**13. B**	**16. B**
2. C	**5. C**	**8. A**	**11. E**	**14. C**	
3. E	**6. E**	**9. D**	**12. C**	**15. A**	

Alıştırmalar/Exercises

Alıştırma / Exercise 1

. $\sqrt{18}+\sqrt{32}-7\sqrt[6]{8}=?$

Yanıt / The answer is **0**

---

2. $\sqrt{\dfrac{3^{-1}}{0{,}3}:\dfrac{0{,}3}{3}}=?$

Yanıt / The answer is $\dfrac{10}{3}$

---

3. $\sqrt{2(1-3^{-2})^{-1}}=?$

Yanıt / The answer is $\dfrac{3}{2}$

---

4. $\dfrac{\sqrt[4]{(-4)^4}-\sqrt[3]{-8}-\sqrt{16}}{\sqrt[5]{-32}}=?$

Yanıt / The answer is **−1**

---

5. $\sqrt{72}-2\sqrt{8}+3\sqrt{50}=?$

Yanıt / The answer is $17\sqrt{2}$

---

6. $\dfrac{\sqrt{0{,}25}}{\sqrt{0{,}04}}+\dfrac{\sqrt{1{,}21}}{\sqrt{0{,}16}}=?$

Yanıt / The answer is $\dfrac{21}{4}$

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7. $\dfrac{\sqrt{0,09}-0,09}{\sqrt{0,81}-0,81}=?$

Yanıt / The answer is $\dfrac{7}{3}$

8. $\dfrac{\sqrt{50}+\sqrt{72}}{\sqrt{8}-\sqrt{2}}=?$

Yanıt / The answer is **11**

9. $\dfrac{\sqrt{1,44}-\sqrt[3]{0,125}}{\sqrt[4]{0,0016}}=?$

Yanıt / The answer is $\dfrac{7}{2}$

10. $\dfrac{\sqrt[3]{(-5)^3}+\sqrt[4]{(-3)^4}-\sqrt[5]{(-2)^5}}{\sqrt[3]{(-8)}}=?$

Yanıt / The answer is **0**

11. $\sqrt{5+\sqrt{11+\sqrt{12+\sqrt{169}}}}=?$

Yanıt / The answer is **3**

12. $\sqrt[3]{\sqrt{\sqrt[4]{8}}}=2^x \Rightarrow x=?$

Yanıt / The answer is $\dfrac{1}{8}$

13. $\sqrt{149^2-140^2}=?$

Yanıt / The answer is **51**

14. $A=\sqrt{12^2+3^4+24\cdot3^2}\Rightarrow 5A=?$

Yanıt / The answer is **105**

15. $\sqrt[7]{8^4+4^6+2^{12}+16^3}=?$

Yanıt / The answer is **4**

16. $\sqrt{a,\overline{b}}=1,\overline{3}\Rightarrow a+b=?$

Yanıt / The answer is **8**

17. $\sqrt{33^2+44^2+132^2}=?$

Yanıt / The answer is **143**

18. $\sqrt{\left(\dfrac{9^{-5}}{9^{-2}+9^{-3}}\right)^{-1}}=?$

Yanıt / The answer is $9\sqrt{10}$

19. $\sqrt{\dfrac{25}{36}+1+\dfrac{9}{25}}=?$

Yanıt / The answer is $\dfrac{43}{30}$

---

20. $\sqrt{1995^2-1994\cdot 1996}=?$

Yanıt / The answer is **1**

---

21. $\sqrt{\dfrac{36}{49}+\dfrac{1}{16}-\dfrac{3}{7}}=?$

Yanıt / The answer is $\dfrac{17}{28}$

---

22. $\sqrt{2002\cdot 1996+9}=?$

Yanıt / The answer is **1999**

---

23. $\sqrt{\dfrac{9}{25}+\dfrac{1}{4}-\dfrac{3}{5}}=?$

Yanıt / The answer is $\dfrac{1}{10}$

---

24. $\sqrt{999\cdot 1001-1004\cdot 996}=?$

Yanıt / The answer is $\sqrt{15}$

1. $\sqrt[3]{\dfrac{a^2}{\sqrt{a}}} = 3 \Rightarrow$ **a = ?**

Yanıt / The answer is **9**

2. $\sqrt{\dfrac{\mathbf{0{,}0108}}{\mathbf{0{,}03}}} - \sqrt{\dfrac{\mathbf{0{,}003}}{\mathbf{0{,}3}}} = ?$

Yanıt / The answer is **0,5**

3. $\dfrac{\sqrt{3} + 3\sqrt{12} - 2\sqrt{48}}{\sqrt{27} - \sqrt{75}} = ?$

Yanıt / The answer is $\mathbf{\dfrac{1}{2}}$

4. $A = \dfrac{\sqrt[3]{12-x} - \sqrt[4]{x-4} + \sqrt{4-x}}{\sqrt{x+5} + x - 5} \Rightarrow$ **A = ?**

Yanıt / The answer is **1**

5. $\sqrt{3x-1} + \sqrt{2y-3} = 0$

$\Rightarrow$ **4y − 12x = ?**

Yanıt / The answer is **2**

6. $\dfrac{\sqrt{32^x} \cdot \sqrt{8^x}}{\sqrt{2^x}} = 2^{14} \Rightarrow$ **x = ?**

Yanıt / The answer is **4**

7. $\dfrac{\sqrt{3^{2a+3b}}}{\sqrt{9^{a-2b}}}=3^{7} \Rightarrow \mathbf{b=?}$

Yanıt / The answer is **2**

8. $\dfrac{7\cdot\sqrt{243}}{\sqrt{147}}=3^{x-4} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **6**

9. $\sqrt{3^{x-1}}=a \Rightarrow \sqrt{3^{x+3}}=?$

Yanıt / The answer is **9a**

10. $\sqrt{\dfrac{3^{x+2}+3^{x-1}}{3^{x+2}-2\cdot 3^{x}}}=?$

Yanıt / The answer is $\dfrac{2\sqrt{3}}{3}$

11. $\sqrt[4]{\sqrt[3]{x}}=\sqrt[4]{8}\cdot\sqrt[6]{32} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is 2^{19}

12. $x^{-\frac{4}{3}}+1=17 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is $\dfrac{1}{8}$

13. $5^{a+2} = 225 \Rightarrow \sqrt{\mathbf{125^{a}}} + \sqrt[3]{\mathbf{3 \cdot 5^{a}}} = \mathbf{?}$

Yanıt / The answer is **30**

---

14. $\sqrt[x]{\dfrac{\mathbf{9^{x+1} - 3^{2x}}}{\mathbf{8 \cdot 3^{x}}}} = \mathbf{?}$

Yanıt / The answer is **3**

---

15. $x, y \in Z^{+}$

$$\left.\begin{array}{l} \sqrt[x]{2^{y}} = \sqrt[y]{512^{x}} \\ x + y = 24 \end{array}\right\} \Rightarrow \mathbf{x = ?}$$

Yanıt / The answer is **6**

16. $\sqrt{a^{3} - 8} + \sqrt{2b - 16} = 0 \Rightarrow \mathbf{a + b = ?}$

Yanıt / The answer is **10**

---

17. $\sqrt{x \cdot \sqrt{x}} = 125 \Rightarrow \sqrt{\mathbf{x + \sqrt{x}}} = \mathbf{?}$

Yanıt / The answer is $\mathbf{5\sqrt{26}}$

---

18. $\sqrt[3]{\dfrac{\mathbf{x^{2}}}{\mathbf{y}} \sqrt{\dfrac{\mathbf{y}}{\mathbf{x}} \sqrt{\dfrac{\mathbf{x}}{\mathbf{y}}}}} \cdot \sqrt[12]{\dfrac{\mathbf{y^{3}}}{\mathbf{x}}} = \mathbf{?}$

Yanıt / The answer is $\mathbf{\sqrt{x}}$

19. $\sqrt[3]{4\sqrt{2}} = \left(\frac{1}{32}\right)^{x} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is $-\frac{1}{6}$

---

20. $\sqrt[5]{3\cdot\sqrt[4]{32}} = \sqrt[5]{3}\cdot\sqrt[4]{x} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **2**

---

21. $\frac{2}{\sqrt{5}-\sqrt{3}} - \frac{2}{\sqrt{5}+\sqrt{3}} = ?$

Yanıt / The answer is $2\sqrt{3}$

---

22. $\left.\begin{array}{l}\sqrt{(3-\sqrt{5})^2} = A \\ \sqrt{(\sqrt{5}-4)^2} = B\end{array}\right\} \Rightarrow \mathbf{B - A = ?}$

Yanıt / The answer is **1**

---

23. $\frac{\sqrt{18}}{\sqrt{2}} + \frac{2}{2-\sqrt{5}} + \frac{8}{\sqrt{5}+1} = ?$

Yanıt / The answer is **−3**

---

24. $\frac{5}{\sqrt{(\sqrt{2}-\sqrt{7})^2}} + \frac{14}{\sqrt{7}} - \sqrt{2} = ?$

Yanıt / The answer is $3\sqrt{7}$

1. $x = \frac{\sqrt{3}}{2} + 1 \Rightarrow \mathbf{x \cdot (x-2) = ?}$

Yanıt / The answer is $-\frac{1}{4}$

2. $\left.\begin{array}{l} \sqrt{a} = \sqrt{3} - 1 \\ \sqrt{b} = \sqrt{3} + 1 \end{array}\right\} \Rightarrow \mathbf{a + b = ?}$

Yanıt / The answer is **8**

3. $a = 0,\overline{3}$ ve (and) $b = 0,\overline{1}$

$$\Rightarrow \frac{\sqrt{1 + \frac{1}{a}} + \sqrt{\frac{1}{b}}}{\sqrt{3ab}} = ?$$

Yanıt / The answer is **15**

4. $\left.\begin{array}{l} x + y = 12 \\ x \cdot y = 16 \end{array}\right\} \Rightarrow \sqrt{\frac{\mathbf{x}}{\mathbf{y}}} - \sqrt{\frac{\mathbf{y}}{\mathbf{x}}} = ?$

Yanıt / The answer is $\sqrt{5}$

5. $\frac{4\sqrt{x} - 3\sqrt{y}}{\sqrt{x} + \sqrt{y}} = 3 \Rightarrow \frac{\mathbf{x}}{\mathbf{y}} = ?$

Yanıt / The answer is **36**

6. $\frac{a}{b} + \frac{b}{a} = 4 \Rightarrow \sqrt{\mathbf{22 + \frac{a^2}{b^2} + \frac{b^2}{a^2}}} = ?$

Yanıt / The answer is **6**

7. $\left.\begin{array}{l} x=\sqrt{3}+1 \\ y=\sqrt{3}-1 \end{array}\right\} \Rightarrow \left(\dfrac{x+y}{xy}\right)^2=?$

Yanıt / The answer is **3**

8. $\left.\begin{array}{l} \dfrac{a}{b}=2 \\ a+c=25 \\ b+c=15 \end{array}\right\} \Rightarrow \sqrt{b^2+a+1}=?$

Yanıt / The answer is **11**

9. $\dfrac{a+b}{\sqrt{4ab+25}}=1 \Rightarrow |a-b|=?$

Yanıt / The answer is **5**

10. $2^x-2^{-x}=4\sqrt{2}$

$\Rightarrow \sqrt{4^x+4^{-x}+2}=?$

Yanıt / The answer is **6**

11. $\left.\begin{array}{l} \sqrt[3]{b^2+11}=3 \\ \sqrt[b]{a^2-4}=b \end{array}\right\} \Rightarrow a^2+b^2=?$

Yanıt / The answer is **276**

12. $a^x-a^{-x}=4$

$\Rightarrow 3\sqrt{2}\sqrt{a^{2x}+a^{-2x}}=?$

Yanıt / The answer is **18**

13. $\left.\begin{array}{l} a>0,\ a+\sqrt{x}=2 \\ b+4\sqrt{x}=9 \end{array}\right\} \Rightarrow \mathbf{(4a-b)^2=?}$

Yanıt / The answer is **1**

---

14. $\mathbf{x-\dfrac{\sqrt{3}}{x}=4 \Rightarrow 4x^2-16x-2\sqrt{3}=?}$

Yanıt / The answer is **$2\sqrt{3}$**

---

15. $\mathbf{\dfrac{21+\sqrt{4a-3}}{4a+\sqrt{3-4a}}=?}$

Yanıt / The answer is **7**

---

16. $a>0,$

$\sqrt{24+a}+\sqrt{a}=6$

$\Rightarrow \mathbf{\sqrt{24+a}-\sqrt{a}=?}$

Yanıt / The answer is **4**

---

17. $a>2,$

$a^2-4a+2=0 \Rightarrow \mathbf{\sqrt{\dfrac{a^4+4}{12a^2}}=?}$

Yanıt / The answer is **1**

---

18. $a, b \in R^+,$

$\left.\begin{array}{l} \sqrt{a}-\sqrt{b}=3 \\ a-b=21 \end{array}\right\} \Rightarrow \mathbf{2a+3b=?}$

Yanıt / The answer is **62**

19. $$\left.\begin{aligned}\frac{a\cdot b}{c}&=4\\ \frac{a\cdot c}{b}&=3\\ \frac{b\cdot c}{a}&=1\end{aligned}\right\}\Rightarrow \sqrt{\mathbf{a^2+c^2+1}}=\mathbf{?}$$

Yanıt / The answer is **4**

20. $$\sqrt{\mathbf{4-2\sqrt{3}}}+\sqrt{\mathbf{7-4\sqrt{3}}}=\mathbf{?}$$

Yanıt / The answer is **1**

21. $$(\sqrt{\mathbf{3}}+\sqrt{\mathbf{2}})\cdot\sqrt{\mathbf{5-2\sqrt{6}}}=\mathbf{?}$$

Yanıt / The answer is **1**

22. $$\left.\begin{aligned}A&=\sqrt{6}+\sqrt{5}\\ B&=\sqrt{6}-\sqrt{5}\end{aligned}\right\}\Rightarrow \frac{\mathbf{A}}{\mathbf{B}}+\frac{\mathbf{B}}{\mathbf{A}}=\mathbf{?}$$

Yanıt / The answer is **22**

23. $$\left.\begin{aligned}x&=2-\sqrt{3}\\ y&=2+\sqrt{3}\end{aligned}\right\}\Rightarrow \sqrt{\mathbf{x^2-2xy+y^2}}=\mathbf{?}$$

Yanıt / The answer is **$2\sqrt{3}$**

24. $$\frac{\sqrt{\mathbf{6}}-\sqrt{\mathbf{3}}}{\sqrt{\mathbf{6}}+\sqrt{\mathbf{3}}}+\frac{\mathbf{4}}{\sqrt{\mathbf{2}}}=\mathbf{?}$$

Yanıt / The answer is **3**

$$\left.\begin{array}{l} A=\sqrt{3}-\sqrt{2} \\ B=\sqrt{3}+\sqrt{2} \end{array}\right\} \Rightarrow \frac{A^2+B^2}{A\cdot B}=?$$

Yanıt / The answer is **10**

---

2. $\sqrt{7-\sqrt{45}}+\sqrt{7+\sqrt{45}}=?$

Yanıt / The answer is **$3\sqrt{2}$**

---

3. $\dfrac{2}{\sqrt{3+\sqrt{8}}}-\dfrac{2}{\sqrt{3-\sqrt{8}}}=?$

Yanıt / The answer is **–4**

---

4. $\dfrac{\sqrt{3}+1}{\sqrt{15}+\sqrt{5}+\sqrt{3}+1}=?$

Yanıt / The answer is $\dfrac{\sqrt{5}-1}{4}$

---

5. $\dfrac{10}{\sqrt{6}+1}+\dfrac{4}{\sqrt{6}-2}-\dfrac{12}{3-\sqrt{6}}=?$

Yanıt / The answer is **–10**

---

6. $\dfrac{1}{\sqrt{4+2\sqrt{3}}}-\dfrac{1}{\sqrt{4-2\sqrt{3}}}=?$

Yanıt / The answer is **–1**

7. $$\left.\begin{aligned} a &= \sqrt[2]{3} \\ b &= \sqrt[3]{4} \\ c &= \sqrt[6]{6} \end{aligned}\right\} \Rightarrow \mathbf{? < ? < ?}$$

Yanıt / The answer is **$c < b < a$**

---

8. $$\frac{4}{\sqrt[3]{5}-1} = ?$$

Yanıt / The answer is $\sqrt[3]{25} + \sqrt[3]{5} + 1$

---

9. $$\frac{1}{1-\dfrac{1}{2+\dfrac{1}{\sqrt{2}}}} = ?$$

Yanıt / The answer is **$3-\sqrt{2}$**

---

10. $$\sqrt{2-\sqrt{x}} + 1 = \sqrt{2+\sqrt{x}} \Rightarrow \mathbf{x = ?}$$

Yanıt / The answer is $\mathbf{\dfrac{7}{4}}$

---

11. $$\left.\begin{aligned} 4a-b &= 60 \\ 2\sqrt{a}-\sqrt{b} &= 6 \end{aligned}\right\} \Rightarrow \mathbf{a+b=?}$$

Yanıt / The answer is **20**

---

12. $$\left.\begin{aligned} x &= 2\sqrt{3}-1 \\ y &= 2\sqrt{3}+1 \end{aligned}\right\} \Rightarrow \mathbf{x^2-y^2=?}$$

Yanıt / The answer is **$-8\sqrt{3}$**

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13. $\sqrt{4-2\sqrt{3}}+\sqrt{4+2\sqrt{3}}-\sqrt{3}=?$

Yanıt / The answer is $\sqrt{3}$

14. $\dfrac{\sqrt{x}+\sqrt{2x}}{\sqrt{y}+\sqrt{2y}}-\dfrac{y-\sqrt{xy}}{\sqrt{xy}-x}=?$

Yanıt / The answer is $\dfrac{x-y}{\sqrt{xy}}$

15. $x, y \in R$,

$x\sqrt{2}+y\sqrt{3}=\dfrac{\sqrt{6}+1}{\sqrt{3}} \Rightarrow x+y=?$

Yanıt / The answer is $\dfrac{4}{3}$

16. $(\sqrt{5}+\sqrt{2})^3\cdot(\sqrt{15}-\sqrt{6})^3=?$

Yanıt / The answer is $81\sqrt{3}$

17. $\sqrt{3}+1=a \Rightarrow (3+\sqrt{3})^4=?$

Yanıt / The answer is $9a^4$

18. $\sqrt{20+\sqrt{20+\sqrt{20}}}\ \ldots=x \Rightarrow x=?$

Yanıt / The answer is 5

19. $\sqrt{x-\sqrt{x-\sqrt{x}}}\ldots=6 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **42**

20. $\sqrt[3]{16\cdot\sqrt[3]{16\cdot\sqrt[3]{16}}}\ldots=x,$

$\sqrt[4]{32:\sqrt[4]{32:\sqrt[4]{32}}}\ldots=y$

$\Rightarrow \sqrt{\mathbf{x}}+\mathbf{y}^2=\mathbf{?}$

Yanıt / The answer is **6**

21. $\left(\sqrt{\mathbf{6-2\sqrt{4+2\sqrt{3}}}}\right)\cdot\left(\sqrt{\mathbf{3}}+\mathbf{1}\right)=\mathbf{?}$

Yanıt / The answer is **2**

22. $\sqrt[3]{n\cdot\sqrt[3]{n\cdot\sqrt[3]{n\ldots}}}+\sqrt{3\sqrt{3\ldots}}=5 \Rightarrow \mathbf{n=?}$

Yanıt / The answer is **4**

23. $A=\sqrt{5\sqrt{2\sqrt{5\sqrt{2\ldots}}}} \Rightarrow \mathbf{A=?}$

Yanıt / The answer is $\sqrt[3]{50}$

24. $\sqrt{30+\sqrt{30+\sqrt{30+\ldots}}}=x^2-x \Rightarrow \sum \mathbf{x=?}$

Yanıt / The answer is **1**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $\sqrt{(-4)^2}+\sqrt[3]{-8}-\sqrt{16}=?$

A) –4　B) –2　C) 0　D) 2　E) 4

2. x ∈ Z, A ∈ R,

$\sqrt{x+6}+\sqrt{8-x}=A \Rightarrow \sum x=?$

A) 10　B) 11　C) 12　D) 14　E) 15

3. $\dfrac{\sqrt{4-x}+\sqrt{x}}{\sqrt{20-x}-\sqrt{x-4}}=?$

A) $\frac{1}{4}$　B) $\frac{1}{2}$　C) 1　D) 2　E) 4

4. $\left(\sqrt{100}+\sqrt[3]{125}-\sqrt[4]{16}\right)\cdot\sqrt{(-2)^2}=?$

A) 6　B) 9　C) 12　D) 13　E) 26

5. $\left(\sqrt{80}+\sqrt{45}-\sqrt{500}\right)\cdot\sqrt{20}=?$

A) –30　B) –25　C) –20　D) –15　E) –10

6. $\left(\sqrt{0,01}+\sqrt{0,04}+\sqrt{0,09}\right):\sqrt{0,36}=?$

A) 1　B) $\sqrt{2}$　C) $\sqrt{3}$　D) 2　E) 3

7. $\left.\begin{array}{l}\sqrt[5]{8}=2^a\\ \sqrt[3]{9}=3^b\end{array}\right\}\Rightarrow a\cdot b=?$

A) $\frac{1}{5}$　B) $\frac{2}{5}$　C) $\frac{3}{5}$　D) $\frac{4}{5}$　E) 1

8. $\sqrt[4]{27^{x-1}}=\sqrt[3]{9^{x+2}}\Rightarrow x=?$

A) 25　B) 24　C) 23　D) 22　E) 21

9. $\dfrac{\sqrt{2}+\sqrt{4}+\ldots+\sqrt{28}}{\sqrt{3}+\sqrt{6}+\ldots+\sqrt{42}}=\sqrt{x} \Rightarrow \mathbf{x=?}$

A) 1 B) 2 C) $\sqrt{2}$ D) $\dfrac{2}{3}$ E) $\dfrac{4}{9}$

10. $\dfrac{(\sqrt{5}-1)\cdot(\sqrt{5}+1)}{\sqrt{10}-\sqrt{5}}\cdot\dfrac{\sqrt{2}-1}{\sqrt{5}}=?$

A) $\dfrac{1}{5}$ B) $\dfrac{2}{5}$ C) $\dfrac{3}{5}$ D) $\dfrac{4}{5}$ E) 1

11. $\dfrac{\sqrt{10}-\sqrt{5}+5}{1-\sqrt{2}-\sqrt{5}}=?$

A) $-\sqrt{5}$ B) $-\sqrt{2}$ C) 2 D) $\sqrt{2}$ E) $\sqrt{5}$

12. $\dfrac{a}{\sqrt{2}+1}+\dfrac{b}{\sqrt{2}-1}=4\sqrt{2}+6 \Rightarrow \mathbf{b=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

13. $\dfrac{\sqrt{1{,}69}+\sqrt{0{,}49}}{\sqrt{1{,}44}-\sqrt{0{,}04}}=?$

A) 1 B) $\sqrt{2}$ C) 2 D) $\sqrt{3}$ E) 3

14. $\left(\dfrac{1}{\sqrt{5}-2}+\dfrac{1}{\sqrt{5}+2}\right)\cdot\sqrt{5}=?$

A) 1 B) $\sqrt{5}$ C) $2\sqrt{5}$ D) 5 E) 10

15. $\dfrac{\left(\sqrt[8]{a-1}-\sqrt[8]{a+1}\right)\cdot\left(\sqrt[8]{a-1}+\sqrt[8]{a+1}\right)}{\sqrt{a-1}-\sqrt{a+1}}=\dfrac{1}{\sqrt[4]{3}+\sqrt[4]{5}}$

$\Rightarrow \mathbf{a=?}$

A) 2 B) 3 C) 4 D) 5 E) 6

16. $\left[\left(\sqrt{(4-\sqrt{10})^2}\right)-\left(\sqrt{(\sqrt{10}-4)^2}\right)\right]\cdot\sqrt{10}=?$

A) 0 B) 1 C) $\sqrt{10}$ D) $2\sqrt{5}$ E) $2\sqrt{10}$

Yanıtlar / Answers

1. B	4. E	7. B	10. D	13. C	16. A
2. E	5. A	8. A	11. A	14. E	
3. B	6. A	9. D	12. E	15. C	

$\sqrt{2+\frac{1}{4}}+\sqrt{5+\frac{9}{8}}-\sqrt{5+\frac{1}{16}}=?$

A) $\frac{7\sqrt{2}-3}{4}$ B) $\frac{6\sqrt{2}-5}{2}$ C) $\frac{4\sqrt{2}-2}{3}$

D) $\frac{7\sqrt{2}+3}{4}$ E) $\frac{7\sqrt{2}-4}{3}$

2. $\frac{\sqrt{35}+\sqrt{15}}{\sqrt{14}+\sqrt{6}}:\frac{\sqrt[3]{4}}{\sqrt[3]{25}}=?$

A) $\frac{1}{2}$ B) 1 C) $\frac{5}{2}$

D) $\sqrt{\frac{5}{2}}$ E) $\frac{5}{2}\sqrt[6]{\frac{5}{2}}$

3. $\left(\sqrt{\frac{5}{3}}+\sqrt{\frac{10}{3}}-2\right):\left(\sqrt{5}+\sqrt{10}-2\sqrt{3}\right)=?$

A) $-\sqrt{3}$ B) 1 C) $\frac{\sqrt{3}}{3}$ D) $\sqrt{3}$ E) 3

4. $\sqrt{4+\sqrt{19-\sqrt{4^2-7}}}=?$

A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $3\sqrt{2}$

D) $4\sqrt{2}$ E) $5\sqrt{2}$

5. $A=\sqrt{7}-\sqrt{2}+1$

$B=\sqrt{7}+\sqrt{2}-1$

$\Rightarrow A^2+B^2+2AB=?$

A) 4 B) 12 C) 16 D) 28 E) 36

6. $\frac{\sqrt{2}\cdot\sqrt{3}\cdot\ldots\cdot\sqrt{10}}{\sqrt{4}\cdot\sqrt{6}\cdot\ldots\cdot\sqrt{20}}=?$

A) $\frac{\sqrt{2}}{64}$ B) $\frac{\sqrt{2}}{32}$ C) $\frac{\sqrt{2}}{16}$

D) $\frac{\sqrt{2}}{8}$ E) $\frac{\sqrt{2}}{4}$

7. $\sqrt[3]{100^{2x+1}}=10^2\Rightarrow x=?$

A) 1 B) 2 C) 3 D) 4 E) 5

8. $\frac{3}{\sqrt{x}}+\frac{5}{2\sqrt{x}}+\frac{2}{\sqrt{x}}=\frac{45}{2}\Rightarrow x=?$

A) $\frac{1}{3}$ B) $\frac{\sqrt{3}}{3}$ C) $\sqrt{3}$ D) 3 E) $\frac{1}{9}$

9. $\sqrt{2x-8}+\sqrt{3y-9}=0 \Rightarrow \mathbf{x \cdot y = ?}$

A) 2 B) 6 C) 8 D) 10 E) 12

10. $(x+y-12)^6+\sqrt[6]{x-y-2}=0 \Rightarrow \mathbf{x \cdot y = ?}$

A) 5 B) 15 C) 20 D) 30 E) 35

11. $\sqrt{a}\cdot\sqrt[3]{a^2}\cdot\sqrt[4]{a^3}=a^x \Rightarrow \mathbf{x = ?}$

A) $\frac{19}{12}$ B) $\frac{5}{3}$ C) $\frac{7}{4}$ D) $\frac{11}{6}$ E) $\frac{23}{12}$

12. $\sqrt{2}\cdot\sqrt{3}\cdot\ldots\cdot\sqrt{x}=6\sqrt{20} \Rightarrow \mathbf{x = ?}$

A) 5 B) 6 C) 7 D) 8 E) 9

13. $$\frac{\sqrt{\mathbf{x-4\sqrt{2}}}+\mathbf{x^2}}{x-\sqrt{\mathbf{4\sqrt{2}-x}}}=\mathbf{?}$$

A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $3\sqrt{2}$

D) $4\sqrt{2}$ E) $5\sqrt{2}$

14. $$\left.\begin{array}{l} x=\sqrt[3]{5} \\ y=\sqrt[4]{9} \\ z=\sqrt[6]{10} \end{array}\right\} \Rightarrow \mathbf{?>?>?}$$

A) x > y > z B) x > z > y

C) y > x > z D) y > z > x

E) z > x > y

15. $$\left.\begin{array}{l} a=\sqrt[3]{\frac{1}{9}} \\ b=\sqrt{\frac{1}{27}} \\ c=\sqrt[4]{\frac{1}{3}} \end{array}\right\} \Rightarrow \mathbf{?>?>?}$$

A) a > b > c B) a > c > b

C) b > a > c D) b > c > a

E) c > a > b

16. $$\left.\begin{array}{l} a=(3^{\sqrt{3}})^{2\sqrt{2}} \\ b=(\sqrt{3}^{\,3})^{2} \\ c=(9^{\sqrt{3}})^{2} \end{array}\right\} \Rightarrow \mathbf{?>?>?}$$

A) a > b > c B) a > c > b

C) b > a > c D) b > c > a

E) c > a > b

Yanıtlar / Answers

1. A	**4. B**	**7. A**	**10. E**	**13. D**	**16. E**
2. E	**5. D**	**8. E**	**11. E**	**14. C**	
3. C	**6. B**	**9. E**	**12. B**	**15. E**	

1. $x \in Z, A \in R$,

$\sqrt{x+5} + \sqrt{7-x} = A \Rightarrow \sum x = ?$

A) 10 B) 12 C) 13 D) 15 E) 18

2. $A \in R$,

$\sqrt{x-2} + \sqrt[4]{2-x} + \sqrt[3]{-8} - 3x = A \Rightarrow A = ?$

A) –10 B) –8 C) –6 D) 4 E) 6

3. $\sqrt{(-7)^2} + \sqrt[3]{-64} + \sqrt{(3-\pi)^2} = ?$

A) $3 - \pi$ B) $1 - \pi$ C) $-\pi$

D) π E) $\pi + 3$

4. $\sqrt{2^{x-1}} = \sqrt[5]{8^{x+2}} \Rightarrow x = ?$

A) –17 B) –15 C) 13 D) 15 E) 17

5. $\sqrt[3]{25^{x-2}} = \sqrt[4]{125^{x-7}} \Rightarrow x = ?$

A) 39 B) 42 C) 45 D) 47 E) 53

6. $\sqrt{0{,}75} + \sqrt{0{,}48} - \sqrt{1{,}08} = ?$

A) $\frac{\sqrt{3}}{10}$ B) $\frac{\sqrt{3}}{5}$ C) $\frac{3\sqrt{3}}{10}$

D) $\frac{2\sqrt{3}}{5}$ E) $\frac{\sqrt{3}}{2}$

7. $\left(\sqrt{48} + \sqrt{75} - \sqrt{192}\right) \cdot 2\sqrt{3} = ?$

A) 6 B) $4\sqrt{3}$ C) $6\sqrt{3}$ D) $8\sqrt{3}$ E) 16

8. $\left(\sqrt[3]{16} + \sqrt[3]{54} - \sqrt[3]{128}\right) \cdot \sqrt[3]{4} = ?$

A) 1 B) 2 C) $\sqrt[3]{4}$

D) $\sqrt[3]{6}$ E) $2 \cdot \sqrt[3]{4}$

9. $\dfrac{\sqrt{3}\cdot\sqrt[3]{2}}{\sqrt[6]{3}}=?$

A) $\sqrt[6]{6}$ B) $\sqrt[6]{3}$ C) $\sqrt[6]{2}$
D) $\sqrt[3]{3}$ E) $\sqrt[3]{6}$

10. $\sqrt{2}\cdot\left(\sqrt{18}-1\right)\cdot\left(6+\sqrt{2}\right)=?$

A) 28 B) 30 C) 32 D) 34 E) 36

11. $\dfrac{\sqrt[3]{5}\cdot\sqrt{2}}{\sqrt[6]{2}}:\dfrac{1}{\sqrt[3]{100}}=?$

A) $\sqrt[6]{10}$ B) $\sqrt[3]{10}$ C) $\sqrt{10}$
D) 10 E) 100

12. $\dfrac{\sqrt{1,44}+\sqrt{0,25}}{\sqrt{0,9}-\sqrt{0,4}}\cdot\sqrt{10}=?$

A) 10 B) 17 C) $10\sqrt{10}$
D) $17\sqrt{10}$ E) $23\sqrt{10}$

13. $\dfrac{\sqrt{6}-\sqrt{3}+3}{\sqrt{3}+\sqrt{2}-1}=?$

A) $\sqrt{3}-1$ B) $\sqrt{2}-1$ C) $\sqrt{3}-\sqrt{2}$
D) $\sqrt{3}$ E) $\sqrt{2}$

14. $\dfrac{1}{\sqrt{3}+1}-\dfrac{1}{\sqrt{3}-1}=?$

A) -2 B) -1 C) $-\dfrac{1}{2}$ D) $\dfrac{1}{2}$ E) 1

15. $\dfrac{4}{\sqrt{2}+1}+\dfrac{4}{\sqrt{2}}-\dfrac{6}{\sqrt{2}-1}=?$

A) -10 B) -8 C) $-4\sqrt{2}$
D) $-2\sqrt{2}$ E) $-\sqrt{2}$

16. $\dfrac{17}{3\sqrt{2}+1}-\dfrac{7}{2\sqrt{2}-1}=?$

A) $\sqrt{2}-4$ B) $\sqrt{2}-3$ C) $\sqrt{2}-2$
D) $\sqrt{2}-1$ E) $\sqrt{2}$

Yanıtlar / Answers

1. C	4. A	7. A	10. D	13. D	16. C
2. B	5. D	8. B	11. D	14. B	
3. D	6. C	9. E	12. B	15. A	

1. $\sqrt{(-5)^2} - \sqrt[3]{(-4)^3} = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

2. $\sqrt[3]{8} + \sqrt[4]{81} - \sqrt[3]{-27} = ?$

A) 6 B) 7 C) 8 D) 9 E) 10

3. $\dfrac{\sqrt[3]{(-27)^2} - \sqrt{16}}{\sqrt{36} - \sqrt{4}} = ?$

A) $\frac{3}{4}$ B) 1 C) $\frac{5}{4}$ D) $\frac{3}{2}$ E) $\frac{7}{4}$

4. $\sqrt{1{,}44} - \sqrt{0{,}04} + \sqrt[3]{0{,}064} = ?$

A) 1 B) $\frac{6}{5}$ C) $\frac{3}{2}$ D) $\frac{7}{5}$ E) $\frac{8}{5}$

5. $\sqrt{1+\frac{9}{16}} + \sqrt{1-\frac{9}{25}} = ?$

A) $\frac{41}{20}$ B) 2 C) $\frac{19}{10}$ D) $\frac{9}{5}$ E) $\frac{3}{2}$

6. $\sqrt{2+\frac{1}{4}} + \sqrt{2+\frac{7}{9}} = ?$

A) 3 B) $\frac{19}{6}$ C) $\frac{10}{3}$ D) $\frac{7}{2}$ E) $\frac{11}{3}$

7. $\sqrt{21+\sqrt{13+\sqrt{9}}} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

8. $\sqrt{72} + \sqrt{50} - \sqrt{32} = ?$

A) $6\sqrt{2}$ B) $7\sqrt{2}$ C) $8\sqrt{2}$ D) $9\sqrt{2}$ E) $10\sqrt{2}$

9. $3\sqrt{8}+2\sqrt{18}-3\sqrt{32}=?$

A) $3\sqrt{2}$ B) 0 C) $2\sqrt{2}$ D) $5\sqrt{2}$ E) $7\sqrt{2}$

10. $\sqrt{27}-\sqrt{48}+\sqrt{108}=?$

A) $\sqrt{3}$ B) $3\sqrt{3}$ C) $5\sqrt{3}$ D) $7\sqrt{3}$ E) $9\sqrt{3}$

11. $\left.\begin{array}{l}\sqrt{3}=x\\ \sqrt{5}=y\end{array}\right\} \Rightarrow \sqrt{135}=?$

A) $x^3 \cdot y^2$ B) $x^3 \cdot y^3$ C) $x^2 \cdot y^3$ D) $x^2 \cdot y^2$ E) $x^3 y$

12. $3\sqrt{5}\cdot\sqrt{10}\cdot\sqrt{2}=?$

A) 30 B) 27 C) 25 D) 21 E) 15

13. $\left(\sqrt{3}+\sqrt{5}\right)^2-\sqrt{60}=?$

A) 3 B) 5 C) 7 D) 8 E) 10

14. $\left(\sqrt{6}-\sqrt{2}\right)^2+\sqrt{48}=?$

A) 4 B) 5 C) 6 D) 7 E) 8

15. $\left(\sqrt{5}+\sqrt{2}\right)^2+\left(\sqrt{5}-\sqrt{2}\right)^2=?$

A) 7 B) 10 C) 14 D) 17 E) 21

16. $\sqrt{3x-6}+\sqrt{x+y-5}=0 \Rightarrow x \cdot y=?$

A) 1 B) 2 C) 3 D) 6 E) 12

Yanıtlar / Answers

1. E	4. D	7. E	10. C	13. D	16. D
2. C	5. A	8. B	11. E	14. E	
3. C	6. B	9. B	12. A	15. C	

1. $\dfrac{\sqrt{(-3)^2}-\sqrt[3]{(-4)^3}}{\sqrt[4]{16}-1}=?$

A) –1 B) 1 C) 2 D) 5 E) 7

2. $\dfrac{\sqrt{(-2)^8}+\sqrt[3]{-2^6}}{\sqrt[4]{(-2)^{-4}}}=?$

A) 8 B) 12 C) 24 D) 36 E) 48

3. $\sqrt{1-\dfrac{5}{9}}+\sqrt{2+\dfrac{7}{9}}-\sqrt{1-\dfrac{17}{81}}=?$

A) $\dfrac{7}{9}$ B) $\dfrac{8}{9}$ C) $\dfrac{10}{9}$ D) $\dfrac{13}{9}$ E) $\dfrac{14}{9}$

4. $\left(\dfrac{\sqrt{15}+\sqrt{10}}{3+\sqrt{6}}\right):\dfrac{\sqrt{5}}{3}=?$

A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{5}$ D) $\dfrac{3\sqrt{3}}{5}$ E) $\dfrac{5\sqrt{3}}{3}$

5. $\dfrac{\sqrt{14,4}+\sqrt{6,4}}{\sqrt{12,1}-\sqrt{3,6}}=?$

A) 2 B) 4 C) 5 D) 8 E) 10

6. $\sqrt{(3-\sqrt{7})^2}-\sqrt{(2-\sqrt{7})^2}+\sqrt{28}=?$

A) 1 B) $1-4\sqrt{7}$ C) $5-\sqrt{7}$ D) $5-4\sqrt{7}$ E) 5

7. $3\cdot\sqrt[4]{25}+\sqrt{\dfrac{45}{4}}-\dfrac{1}{2}\sqrt{20}=?$

A) $\dfrac{3\sqrt{5}}{2}$ B) $5\sqrt{5}$ C) $\dfrac{7\sqrt{5}}{2}$ D) $7\sqrt{5}$ E) $\dfrac{9\sqrt{5}}{2}$

8. $\left(\sqrt{0,3\overline{9}}-\sqrt{8,1}\right)\cdot\sqrt{10}=?$

A) –9 B) –7 C) –5 D) –3 E) $-\sqrt{10}$

9. $\sqrt[3]{1+\frac{19}{8}}-\sqrt{2-\frac{2}{9}}+\sqrt{3+\frac{1}{16}}=?$

A) $\frac{23}{12}$ B) $\frac{7}{6}$ C) $\frac{19}{12}$

D) $\frac{5}{4}$ E) $\frac{3}{2}$

10. $\frac{\sqrt[4]{16^{x+4}}}{\sqrt[3]{2^{6x+3}}}=\frac{1}{8} \Rightarrow x=?$

A) –2 B) –1 C) 1 D) 3 E) 6

11. $\sqrt[3]{4^{x}}=\sqrt{\frac{8^{x}}{4}} \Rightarrow x=?$

A) $\frac{6}{5}$ B) $\frac{5}{4}$ C) $\frac{4}{3}$

D) $\frac{3}{2}$ E) 1

12. $x=\sqrt[4]{5},\ y=\sqrt[3]{4},\ z=\sqrt[6]{12} \Rightarrow ?<?<?$

A) $x<z<y$ B) $x<y<z$

C) $y<x<z$ D) $y<z<x$

E) $z<x<y$

13. $x=\sqrt[3]{\frac{1}{4}},\ y=\sqrt[4]{\frac{1}{32}},\ z=\sqrt[5]{\frac{1}{64}}$

$\Rightarrow ?<?<?$

A) $x<y<z$ B) $z<x<y$

C) $y<z<x$ D) $x<z<y$

E) $y<x<z$

14. $\frac{2}{\sqrt{3}-1}+\frac{3}{\sqrt{3}+2}+\frac{6}{\sqrt{3}}=?$

A) 7 B) 3 C) $3\sqrt{3}$

D) $5\sqrt{3}$ E) $7\sqrt{3}$

15. $\left(\sqrt{\frac{3}{2}}-\sqrt{\frac{2}{3}}-2\sqrt{6}\right):\frac{1}{\sqrt{6}}=?$

A) –18 B) –12 C) –11

D) –9 E) –8

16. $\frac{2}{\sqrt{x}}+\frac{\sqrt{x}}{2}=\sqrt{x} \Rightarrow x=?$

A) 2 B) 4 C) 6 D) 8 E) 10

Yanıtlar / Answers

1. E	4. B	7. C	10. E	13. C	16. B
2. C	5. B	8. B	11. A	14. A	
3. D	6. E	9. A	12. A	15. C	

1. $\dfrac{\sqrt{2}\cdot\sqrt[3]{2}\cdot\sqrt[6]{2}}{\sqrt[4]{2}}=?$

A) $2^{\frac{1}{2}}$ B) 2 C) $2^{\frac{3}{4}}$
D) $2^{\frac{5}{4}}$ E) $2^{\frac{7}{4}}$

2. $\dfrac{\sqrt[3]{3}\cdot\sqrt[6]{3}\cdot\sqrt{3}}{\sqrt[5]{3}\cdot\sqrt[5]{81}}=?$

A) 1 B) 2 C) 3
D) 4 E) 5

3. $\sqrt{x}\cdot\sqrt[3]{x}\cdot\sqrt[3]{x^2}=8 \Rightarrow x=?$

A) 2 B) 4 C) 6
D) 8 E) 16

4. $\sqrt{x}+2\sqrt{x}+3\sqrt{x}=24 \Rightarrow x=?$

A) 2 B) 4 C) 16
D) 32 E) 64

5. $\sqrt{\sqrt{7}-\sqrt{3}}\cdot\sqrt{\sqrt{7}+\sqrt{3}}=?$

A) 5 B) 4 C) 3
D) 2 E) 1

6. $\sqrt{\sqrt{6}-\sqrt{3}}\cdot\sqrt{\sqrt{6}+\sqrt{3}}\cdot\sqrt{3}=?$

A) 3 B) 6 C) 9
D) 12 E) 15

7. $\sqrt{3-2\sqrt{2}}=?$

A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $3\sqrt{2}$
D) $\sqrt{2}+1$ E) $\sqrt{2}-1$

8. $\sqrt{11-\sqrt{72}}\cdot(3+\sqrt{2})=?$

A) 3 B) 5 C) 7
D) 9 E) 12

9. $\sqrt{4-\sqrt{15}}\cdot(\sqrt{5}+\sqrt{3})=?$

A) $\sqrt{2}$
B) $2\sqrt{2}$
C) $3\sqrt{2}$
D) $4\sqrt{2}$
E) $5\sqrt{2}$

10. $\sqrt{12+8\sqrt{2}}=?$

A) $2\sqrt{2}$
B) $2+2\sqrt{2}$
C) $3\sqrt{2}$
D) $3+2\sqrt{2}$
E) $5+2\sqrt{2}$

11. $\sqrt{5+\sqrt{21}}=?$

A) $\frac{\sqrt{7}+1}{\sqrt{2}}$
B) $\frac{\sqrt{3}+1}{\sqrt{2}}$
C) $\frac{\sqrt{2}}{\sqrt{7}+\sqrt{3}}$
D) $\frac{\sqrt{7}-\sqrt{2}}{\sqrt{3}}$
E) $\frac{\sqrt{7}+\sqrt{3}}{\sqrt{2}}$

12. $\sqrt{20+\sqrt{20+\sqrt{20\ldots}}}=?$

A) 1
B) 5
C) 10
D) 15
E) 20

13. $\sqrt{30-\sqrt{30-\sqrt{30\ldots}}}=?$

A) 1
B) 3
C) 4
D) 5
E) 7

14. $\sqrt{x+\sqrt{x+\sqrt{x\ldots}}}=6 \Rightarrow x=?$

A) 10
B) 20
C) 30
D) 40
E) 50

15. $\sqrt{x-\sqrt{x-\sqrt{x\ldots}}}=5 \Rightarrow x=?$

A) 10
B) 20
C) 30
D) 40
E) 50

16. $\sqrt{x-\sqrt{x-\sqrt{x\ldots}}}=9 \Rightarrow x=?$

A) 60
B) 90
C) 120
D) 150
E) 180

Yanıtlar / Answers

1. C	4. C	7. E	10. B	13. D	16. B
2. A	5. D	8. C	11. E	14. C	
3. B	6. A	9. A	12. B	15. C	

. $\sqrt{55-\sqrt{38-\sqrt[3]{6+\sqrt{4}}}}=?$

A) 5 B) 6 C) 7 D) 8 E) 9

2. $\sqrt[3]{24+\sqrt{5+\sqrt{18+\sqrt[3]{-8}}}}=?$

A) 2 B) 3 C) 4 D) 5 E) 6

3. $\sqrt[n]{\sqrt[n-1]{x}}=\sqrt[36]{\dfrac{1}{x^{-3}}}\Rightarrow n=?$

A) 1 B) 2 C) 3 D) 4 E) 5

4. $a=\sqrt{x\cdot\sqrt[3]{x\cdot\sqrt{\dfrac{1}{x}}}}$

$b=\sqrt[3]{x^2\cdot\sqrt{\dfrac{1}{x}\cdot\sqrt{x}}}\Rightarrow \dfrac{a}{b}=?$

A) 1 B) $x^{\frac{1}{12}}$ C) $x^{\frac{1}{6}}$

D) $x^{\frac{1}{4}}$ E) $x^{\frac{1}{3}}$

5. $\sqrt{2\cdot\sqrt[3]{4\cdot\sqrt{\dfrac{1}{2}}}}=8^{x-1}\Rightarrow x=?$

A) $\dfrac{5}{2}$ B) $\dfrac{5}{3}$ C) $\dfrac{5}{4}$

D) 1 E) $\dfrac{5}{6}$

6. $\sqrt[3]{\left(\dfrac{1}{9}\right)^{-x}}=\dfrac{\sqrt{27^x}}{3}\Rightarrow x=?$

A) $\dfrac{4}{5}$ B) 1 C) $\dfrac{6}{5}$

D) $\dfrac{7}{5}$ E) $\dfrac{8}{5}$

7. $\sqrt{2x-3}+\sqrt{8x-12}=21\Rightarrow x=?$

A) 25 B) 26 C) 27 D) 28 E) 29

8. $x=\dfrac{1{,}96}{0{,}14}\Rightarrow\sqrt{x+11}=?$

A) 3 B) 4 C) 5 D) 6 E) 7

9. $\dfrac{2}{3\sqrt{2}-1}-\dfrac{2}{3\sqrt{2}+1}=?$

A) $\dfrac{3}{5}$ B) $\dfrac{4}{5}$ C) $\dfrac{2}{17}$

D) $\dfrac{3}{17}$ E) $\dfrac{4}{17}$

10. $\sqrt{1+\sqrt{7-2\sqrt{6}}}=A \Rightarrow A^8=?$

A) $\sqrt{6}$ B) 6 C) 12 D) 36 E) 48

11. $\dfrac{\sqrt{2}}{\sqrt{2}+\sqrt{5}}+\dfrac{\sqrt{5}}{\sqrt{2}-\sqrt{5}}=?$

A) $-\dfrac{7}{3}$ B) $-\dfrac{5}{3}$ C) $-\dfrac{2}{3}$

D) $\dfrac{2}{3}$ E) $\dfrac{5}{3}$

12. $\dfrac{\sqrt[3]{4\cdot\sqrt[3]{4\cdot\sqrt[3]{4\ldots}}}}{\sqrt[3]{2\cdot\sqrt{2}}}=?$

A) $3\sqrt{2}$ B) $\sqrt{2}$ C) $\sqrt[3]{4}$

D) $\dfrac{1}{2}$ E) 2

13. $\sqrt[4]{7+2\sqrt{12}}\cdot\sqrt{2-\sqrt{3}}=?$

A) $\sqrt[4]{2}$ B) $\sqrt{2}$ C) 1 D) 2 E) 4

14. $\sqrt{x+2012}+\sqrt{x-2008}=2010$

$\sqrt{x+2012}-\sqrt{x-2008}=B \Rightarrow B=?$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $\dfrac{\sqrt{10+4\sqrt{6}}}{\sqrt{2}}-\sqrt{2}=?$

A) $\sqrt{3}$ B) $\sqrt{2}$ C) 1 D) 2 E) 3

16. $\sqrt[3]{25^{\frac{x+1}{3}}}=\sqrt{5\sqrt[3]{5\sqrt{5}}} \Rightarrow x=?$

A) $\dfrac{17}{8}$ B) $\dfrac{19}{8}$ C) $\dfrac{21}{8}$

D) $\dfrac{23}{8}$ E) $\dfrac{25}{8}$

Yanıtlar / Answers

1. C	4. A	7. B	10. D	13. C	16. B
2. B	5. C	8. C	11. A	14. B	
3. D	6. C	9. E	12. B	15. A	

1. $\sqrt[3]{a^2\sqrt{a\sqrt{\frac{1}{a}}}} = a^x \Rightarrow$ **x = ?**

A) $\frac{1}{4}$ B) $\frac{3}{4}$ C) 2

D) $\frac{9}{4}$ E) $\frac{11}{4}$

2. $\sqrt[3]{2\sqrt[3]{2\sqrt{2^x}}} = 16 \Rightarrow$ **x = ?**

A) 8 B) 16 C) 32

D) 64 E) 128

3. $\sqrt[3]{x^2\sqrt{x\sqrt[3]{x^2}}} = \sqrt[9]{2^{17}} \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3

D) 4 E) 5

4. $\left(\frac{3}{\sqrt{3}} + 2\right)\cdot\left(\sqrt{3} - 2\right) = ?$

A) −1 B) −3 C) 0

D) 1 E) 3

5. $\frac{1}{\sqrt{3} - \sqrt{2}} + \frac{1}{\sqrt{3} + \sqrt{2}} = ?$

A) $\sqrt{3}$ B) $2\sqrt{3}$ C) $3\sqrt{3}$

D) $4\sqrt{3}$ E) $5\sqrt{3}$

6. $\frac{1}{\sqrt{4 - \sqrt{12}}} + \frac{1}{\sqrt{4 + 2\sqrt{3}}} = ?$

A) $\sqrt{2}$ B) $3\sqrt{2}$ C) $\sqrt{3}$

D) $2\sqrt{3}$ E) $4\sqrt{3}$

7. $\frac{8}{\sqrt{2}} - \frac{1}{\sqrt{2} - 1} + \frac{1}{\sqrt{2} + 1} = ?$

A) $4\sqrt{2} - 2$ B) $3\sqrt{2} - 2$ C) $3\sqrt{2}$

D) $4\sqrt{2}$ E) $2 - 4\sqrt{2}$

8. $\sqrt{\frac{1}{9} + \frac{1}{4} + \frac{1}{3}} = ?$

A) $-\frac{1}{6}$ B) $-\frac{5}{6}$ C) 0

D) $\frac{1}{6}$ E) $\frac{5}{6}$

9. $\sqrt[8]{\dfrac{3^7+3^7+3^7}{4^3+4^3+4^3+4^3}}=?$

A) 1
B) $\dfrac{3}{2}$
C) 2
D) $\dfrac{5}{2}$
E) 3

10. $\sqrt[6]{32\cdot\sqrt[6]{32\cdot\sqrt[6]{32\ldots}}}=?$

A) 1
B) 2
C) 3
D) 4
E) 5

11. $\sqrt[3]{16:\sqrt[3]{16:\sqrt[3]{16\ldots}}}=?$

A) 6
B) 5
C) 4
D) 3
E) 2

12. $\sqrt[4]{32:\sqrt[4]{32:\sqrt[4]{32\ldots}}}=?$

A) 2
B) 4
C) 6
D) 8
E) 16

13. $\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6\ldots}}}}=x$

$\sqrt{27:\sqrt{27:\sqrt{27\ldots}}}=y$

$\Rightarrow x+y=?$

A) 3
B) 6
C) 9
D) 12
E) 15

14. $\left.\begin{array}{l}\sqrt{2}=a\\ \sqrt[3]{3}=b\end{array}\right\}\Rightarrow a^4b^6=?$

A) 6
B) 12
C) 24
D) 36
E) 72

15. $\dfrac{\sqrt{111^2+222^2+333^2}}{37\sqrt{14}}=?$

A) 1
B) 2
C) 3
D) 4
E) 5

16. $\sqrt{900\cdot902-899\cdot903}=?$

A) $\sqrt{3}$
B) $2\sqrt{3}$
C) $3\sqrt{3}$
D) $4\sqrt{3}$
E) $5\sqrt{3}$

Yanıtlar / Answers

1. B	4. A	7. A	10. B	13. B	16. A
2. D	5. B	8. E	11. E	14. D	
3. D	6. C	9. B	12. A	15. C	

1. $x \in Z, A \in R,$

$$A = \sqrt[4]{3-|x-4|} \Rightarrow \sum x = ?$$

A) 7 B) 14 C) 18 D) 21 E) 28

2. $\sqrt{2} = a, \sqrt{3} = b, \sqrt{5} = c \Rightarrow \sqrt{240} = ?$

A) abc B) a^2bc C) ab^2c D) a^3bc E) a^4bc

3. $\sqrt{7+\sqrt{24}} - \sqrt{8-4\sqrt{3}} = ?$

A) $1-\sqrt{2}$ B) $1+\sqrt{2}$ C) $\sqrt{6}$ D) $2\sqrt{6}$ E) $\sqrt{6}-\sqrt{2}$

4. $A = \sqrt{7+2\sqrt{12}} \Rightarrow A + \dfrac{1}{A} = ?$

A) 2 B) 4 C) $2\sqrt{3}$ D) $2+\sqrt{3}$ E) $2-\sqrt{3}$

5. $\sqrt{2012 \cdot 2014 + 1} = ?$

A) 2012 B) 2013 C) 2014 D) 2015 E) 2016

6. $\sqrt{\dfrac{1}{144} - \dfrac{1}{30} + \dfrac{1}{25}} = ?$

A) $-\dfrac{7}{60}$ B) $-\dfrac{7}{30}$ C) $\dfrac{7}{15}$ D) $\dfrac{7}{30}$ E) $\dfrac{7}{60}$

7. $\dfrac{1}{\sqrt{3} - \dfrac{1}{1+\dfrac{1}{\sqrt{3}}}} = ?$

A) $\sqrt{3}-1$ B) $\sqrt{3}+1$ C) $\dfrac{\sqrt{3}+1}{2}$ D) $\dfrac{\sqrt{3}+1}{3}$ E) $\dfrac{\sqrt{3}-1}{2}$

8. $\sqrt{\dfrac{\sqrt{2}-1}{\sqrt{2}+1}} - \sqrt{\dfrac{\sqrt{2}+1}{\sqrt{2}-1}} = ?$

A) −2 B) −1 C) $-2\sqrt{2}$ D) 2 E) $2\sqrt{2}$

9. $\dfrac{\sqrt[4]{0,0016}+\sqrt[3]{0,027}}{\sqrt{0,49}-\sqrt[5]{32\cdot 10^{-5}}}=?$

A) -1 B) $-\dfrac{1}{2}$ C) $\dfrac{1}{2}$

D) 1 E) 2

10. $\left(3\sqrt{3}\right)^{\sqrt{x}}=\left(\sqrt[3]{9}\right)^{\sqrt{5}} \Rightarrow x=?$

A) $\dfrac{80}{81}$ B) $\dfrac{40}{81}$ C) $\dfrac{20}{9}$

D) $\dfrac{10}{9}$ E) $\dfrac{8}{9}$

11. $\sqrt{x-\sqrt{x-\sqrt{x\dots}}}=4$

$\sqrt{y+\sqrt{y+\sqrt{y\dots}}}=8 \Rightarrow \dfrac{x}{y}=?$

A) $\dfrac{1}{2}$ B) $\dfrac{2}{3}$ C) $\dfrac{4}{7}$

D) $\dfrac{5}{8}$ E) $\dfrac{5}{14}$

12. $\sqrt{2:\sqrt{2:\sqrt{2:\dots}}}=A$

$\sqrt[4]{54\cdot\sqrt[4]{54\cdot\sqrt[4]{54\dots}}}=B \Rightarrow \dfrac{A}{B}=?$

A) $\dfrac{1}{2}$ B) $\dfrac{1}{3}$ C) $\dfrac{1}{\sqrt{2}}$

D) $\dfrac{1}{\sqrt{3}}$ E) $\dfrac{1}{\sqrt{6}}$

13. $\sqrt[3]{27x-27}-\sqrt[3]{1-x}=8 \Rightarrow x=?$

A) 8 B) 9 C) 16 D) 27 E) 32

14. $\dfrac{2}{\dfrac{\sqrt{a}}{\sqrt{b}}-1}-\dfrac{2}{1-\dfrac{\sqrt{b}}{\sqrt{a}}}=?$

A) -2 B) -1 C) $\sqrt{a}$

D) $\sqrt{b}$ E) $\sqrt{a}-\sqrt{b}$

15. $\dfrac{2\sqrt{2}+2\sqrt{2}}{\sqrt[3]{4}+\sqrt[3]{4}}=A \Rightarrow A^6=?$

A) 4 B) 8 C) 16 D) 32 E) 64

16. $\dfrac{3\sqrt{5}}{\sqrt{15}}+\dfrac{\sqrt{3}}{\sqrt{12}+\sqrt{6}}-\dfrac{2\sqrt{2}}{\sqrt{6}-\sqrt{2}}=?$

A) $\dfrac{1}{2}$ B) $-\dfrac{\sqrt{2}}{2}$ C) $\dfrac{1}{\sqrt{2}}$

D) $\dfrac{\sqrt{2}}{2}$ E) $\dfrac{1+\sqrt{2}}{2}$

Yanıtlar / Answers

1. E	4. B	7. D	10. A	13. B	16. B
2. E	5. B	8. A	11. E	14. A	
3. B	6. E	9. D	12. B	15. D	

$\dfrac{18+\sqrt{3-x}}{x+\sqrt{x-3}}=?$

A) 1 B) 2 C) 3 D) 6 E) 8

2. $a^2 = 5 + 2\sqrt{6} \Rightarrow a\cdot(\sqrt{3}-\sqrt{2}) = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\sqrt{12+2\sqrt{11}}\cdot(\sqrt{11}-1)=?$

A) 4 B) 6 C) 8 D) 9 E) 10

4. $4^a = 3 \Rightarrow 2^{5a} = ?$

A) $3\sqrt{3}$ B) $5\sqrt{3}$ C) $9\sqrt{3}$ D) $12\sqrt{3}$ E) $15\sqrt{3}$

5. $\sqrt{\dfrac{9}{16}+\dfrac{1}{2}+\dfrac{1}{9}}=?$

A) $\dfrac{10}{9}$ B) $\dfrac{11}{10}$ C) $\dfrac{12}{11}$ D) $\dfrac{13}{12}$ E) $\dfrac{14}{13}$

6. $\sqrt{\dfrac{25}{144}-\dfrac{5}{14}+\dfrac{9}{49}}=?$

A) $\dfrac{1}{49}$ B) $\dfrac{1}{56}$ C) $\dfrac{1}{70}$ D) $\dfrac{1}{77}$ E) $\dfrac{1}{84}$

7. $\sqrt[6]{\sqrt{5}-1}\cdot\sqrt{\sqrt{5}+1}\cdot\sqrt[3]{\sqrt{5}-1}=?$

A) 2 B) 4 C) 5 D) 6 E) 7

8. $\sqrt{2}+\sqrt{4}+\sqrt{6}+\ldots+\sqrt{48}+\sqrt{50}=A$

$\Rightarrow 1+\sqrt{2}+\sqrt{3}+\ldots+\sqrt{24}+\sqrt{25}=?$

A) $\dfrac{A\sqrt{2}}{2}$ B) $A\sqrt{2}$ C) $\dfrac{A}{2}$ D) $\dfrac{A\sqrt{2}}{4}$ E) $\dfrac{A\sqrt{2}}{8}$

9. $\sqrt{973\cdot 977+4}=?$

A) 675 B) 775 C) 875
D) 975 E) 1075

10. $\dfrac{\sqrt{5+2\sqrt{6}}}{\sqrt{2}+\sqrt{3}}=?$

A) 1 B) 3 C) 5
D) 7 E) 9

11. $\dfrac{1}{\sqrt{5-2\sqrt{6}}}-\dfrac{1}{\sqrt{5+2\sqrt{6}}}=?$

A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $4\sqrt{2}$
D) $5\sqrt{2}$ E) $6\sqrt{2}$

12. $(\sqrt{7}-1)\cdot\left(1+\dfrac{3\sqrt{7}}{7}+\dfrac{4}{\sqrt{7}}\right)=?$

A) 2 B) 3 C) 4
D) 5 E) 6

13. $\dfrac{\sqrt{1,69}-\sqrt{0,16}}{\sqrt{0,25}+\sqrt{0,16}}=?$

A) 5 B) 4 C) 3
D) 2 E) 1

14. $x<0<y \Rightarrow \sqrt{(x-y)^2}+\sqrt{x^2}+\sqrt{y^2}=?$

A) $y-x$ B) $x-y$ C) $x+y$
D) $2(y-x)$ E) $2(y+x)$

15. $\sqrt{\dfrac{1}{25}+\dfrac{1}{9}-\dfrac{2}{15}}=?$

A) $\dfrac{1}{15}$ B) $\dfrac{2}{15}$ C) $\dfrac{1}{5}$
D) $\dfrac{4}{15}$ E) $\dfrac{2}{5}$

16. $x\sqrt{0,08}=2 \Rightarrow x=?$

A) $\sqrt{2}$ B) $3\sqrt{2}$ C) $5\sqrt{2}$ D) $7\sqrt{2}$ E) $8\sqrt{2}$

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. D	4. C	7. A	10. A	13. E	16. C
2. A	5. D	8. A	11. B	14. D	
3. E	6. E	9. D	12. E	15. B	

1. $\sqrt{\sqrt[4]{3}-1}\cdot\sqrt{\sqrt[4]{3}+1}\cdot\sqrt{\sqrt{3}+1}=?$

A) $\sqrt{3}-1$ B) $\sqrt{3}$ C) $\sqrt{2}$

D) 1 E) 2

2. $2 \leq x < 3$,

$\sqrt{x^2-6x+9}-\sqrt{x^2-4x+4}=x-1$

$\Rightarrow$ **x = ?**

A) 2 B) $\frac{5}{2}$ C) $\frac{5}{3}$

D) $\frac{7}{3}$ E) $\frac{9}{4}$

3. $\sqrt{x\sqrt[3]{x^2}}=\sqrt[3]{x\sqrt{\left(\frac{1}{x}\right)^m}} \Rightarrow \mathbf{m=?}$

A) –5 B) –3 C) –2 D) 2 E) 3

4. $\sqrt{2}+\frac{1}{\sqrt{2}-1}:\sqrt{2}-\frac{1}{\sqrt{2}+1}=?$

A) $2+\sqrt{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $\frac{4-\sqrt{2}}{2}$

D) $\frac{4+\sqrt{2}}{2}$ E) $\frac{6+\sqrt{2}}{2}$

5. $\sqrt{2}\cdot x-1=x+\sqrt{2} \Rightarrow \mathbf{x^2-6x+9=?}$

A) $\sqrt{2}-1$ B) $\sqrt{2}+1$ C) $2\sqrt{2}-1$

D) $2\sqrt{2}$ E) 8

6. $\sqrt{\frac{1}{36}+\frac{1}{4}-\frac{1}{6}}=?$

A) $-\frac{1}{2}$ B) $-\frac{1}{3}$ C) $\frac{1}{3}$

D) $\frac{1}{2}$ E) $\frac{1}{6}$

7. $\frac{2}{\sqrt{5-\sqrt{24}}}-\frac{2}{\sqrt{5+\sqrt{24}}}=?$

A) $-4\sqrt{3}$ B) $-2\sqrt{3}$ C) $2\sqrt{2}$

D) $4\sqrt{2}$ E) $2\sqrt{3}-2\sqrt{2}$

8. $\sqrt{3+\sqrt{5}}-\sqrt{3-\sqrt{5}}=?$

A) $\frac{\sqrt{2}}{2}$ B) $\sqrt{2}$ C) $2\sqrt{2}$

D) $3\sqrt{2}$ E) $\sqrt{2}-1$

9. $A = \sqrt{32 - \sqrt{42 + \sqrt{42 + \sqrt{42 \ldots}}}}$

$B = \sqrt{45 + \sqrt{20 - \sqrt{20 - \sqrt{20 \ldots}}}} \Rightarrow \mathbf{A \cdot B = ?}$

A) 32 B) 35 C) 42 D) 45 E) 54

20

10. $A = \sqrt{2 \cdot \sqrt{3 \cdot \sqrt{2 \cdot \sqrt{3 \ldots}}}}$

$B = \sqrt{3 \cdot \sqrt{2 \cdot \sqrt{3 \cdot \sqrt{2 \ldots}}}} \Rightarrow \mathbf{A \cdot B = ?}$

A) 6 B) 8 C) 9 D) 12 E) 18

11. $\dfrac{\sqrt{\mathbf{5}}}{\sqrt{\mathbf{15}} - \sqrt{\mathbf{10}}} - \dfrac{\sqrt{\mathbf{3}}}{\mathbf{3} + \sqrt{\mathbf{6}}} = \mathbf{?}$

A) $-2\sqrt{3}$ B) $-2\sqrt{2}$ C) 0

D) $2\sqrt{2}$ E) $2\sqrt{3}$

12. $\dfrac{\mathbf{x - 3}}{\sqrt{\mathbf{x}} + \sqrt{\mathbf{3}}} - \left(\sqrt{\mathbf{x}} + \sqrt{\mathbf{3}}\right) = \mathbf{?}$

A) $-2\sqrt{x}$ B) $-2\sqrt{3}$ C) $2\sqrt{x}$

D) $\sqrt{3}$ E) $2\sqrt{3}$

13. $\sqrt{x \cdot \sqrt[3]{x \cdot \sqrt{x}}} = y$

$\dfrac{x}{y} = 2 \Rightarrow \mathbf{x + y = ?}$

A) 6 B) 12 C) 15 D) 18 E) 24

14. $\sqrt{3 + \sqrt{x}} - \sqrt{3 - \sqrt{x}} = \sqrt{2} \Rightarrow \mathbf{x = ?}$

A) 3 B) 4 C) 5 D) 6 E) 8

15. $a = \sqrt[4]{8}$, $b = \sqrt[3]{4}$, $c = \sqrt[12]{128}$

$\Rightarrow$ **? < ? < ?**

A) b < a < c B) a < b < c

C) c < a < b D) c < b < a

E) b < c < a

16. $\sqrt{3\sqrt[3]{3\sqrt[3]{3^2 \cdot \sqrt{3}}}} = ?$ $\mathbf{x = ?}$

A) $\dfrac{8}{9}$ B) $\dfrac{31}{36}$ C) $\dfrac{5}{6}$ D) $\dfrac{29}{36}$ E) $\dfrac{14}{18}$

[EGE ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. C	**4. D**	**7. D**	**10. A**	**13. E**	**16. D**
2. A	**5. E**	**8. B**	**11. D**	**14. C**	
3. B	**6. C**	**9. B**	**12. B**	**15. D**	

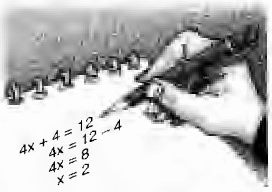
ÜNİTE

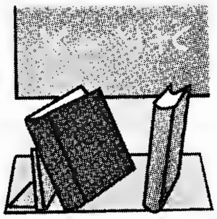
UNIT 4

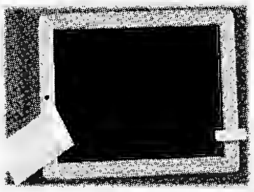
Johann Heinrich Lambert [1728 – 1777]

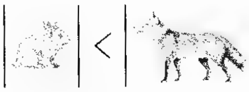
Johann Lambert, ilk defa π nin bir irrasyonel sayı olduğunu kesin olarak ispatlayan ünlü Fransız matematikçisidir.

Johann Lambert was the first to provide a rigorous proof that π is irrational.









✓ **KONU ÖZETLERİ** . . . . **257 – 262**
✓ **BİRİNCİ DERECEDEN DENKLEMLER** . . . . **263 – 290**
✓ **BİRİNCİ DERECEDEN EŞİTSİZLİKLER** . . . . **291 – 306**
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✓ SUMMARY . . . . 257 – 262
✓ FIRST ORDER EQUATIONS . . . . 263 – 290
✓ FIRST ORDER INEQUALITIES . . . . 291 – 306
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BU SAYFADA KONU MATERYALİ YOKTUR.

NO SUBJECT MATERIAL ON THIS PAGE.

BİRİNCİ DERECEDEN DENKLEMLER / FIRST ORDER EQUATIONS

Tanım : $a \neq 0$ olmak üzere $ax + b = 0$ ifadesine birinci dereceden bir bilinmeyenli denklem denir.

Definition: Providing that $a \neq 0$, the expression $ax + b = 0$ is called a first order equation with one unknown.

ax + b = 0 Denkleminin Çözüm Kümesi
The Solution Set of ax + b = 0

1. durum / Situation 1:

$a \neq 0 \Rightarrow x = \frac{-b}{a} \Rightarrow ÇK(SS) = \{-\frac{b}{a}\}$

2. durum / Situation 2:

$a = 0$ ve (and) $b \neq 0 \Rightarrow ÇK(SS) = \varnothing$

3. durum / Situation 3:

$a = 0$ ve (and) $b = 0 \Rightarrow ÇK(SS) = R$

Birinci Dereceden İki Bilinmeyenli Denklemler
First Order Equations with two Unknowns

Tanım : $a, b, c \in R$, $a \neq 0$, $b \neq 0$ olmak üzere
$ax + by + c = 0$ şeklindeki eşitliklere **birinci dereceden iki bilinmeyenli denklem** denir.

$$\begin{aligned} ax + by + c &= 0 \\ dx + ey + f &= 0 \end{aligned}$$

şeklinde iki bilinmeyenli birden fazla denklemden oluşan sisteme **iki bilinmeyenli denklem sistemi** denir.

Definition: Provided that $a, b, c \in R$, $a \neq 0$, $b \neq 0$, the equalities in the form of $ax + by + c = 0$ are called first order equations two unknowns.

$$\begin{aligned} ax + by + c &= 0 \\ dx + ey + f &= 0 \end{aligned}$$

System in a form as shown above which is composed of more than one equalities with two unknowns is called a system of equation with two unknowns.

İki Bilinmeyenli Denklem Sisteminin Çözüm Kümesi
The Solution Set of a System of Equation with two Unknows

1. durum / Situation 1:

$\frac{a}{d} \neq \frac{b}{e}$ ise çözüm kümesi bir elemanlıdır.
then the solution set has one element.

2. durum / Situation 2:

$\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$ ise çözüm kümesi sonsuz elemanlıdır.
then the solution set has infinite number of elements.

3. durum / Situation 3:

$\frac{a}{d} = \frac{b}{e} \neq \frac{c}{f}$ ise çözüm kümesi boş kümedir.
then the solution set is an empty set.

EŞİTSİZLİKLER ve MUTLAK DEĞER
INEQUALITIES & ABSOLUTE VALUE

EŞİTSİZLİKLER / INEQUALITIES

1. $a < b \Leftrightarrow a \mp c < b \mp c$

2. $a < b$ ve (and) $c > 0 \Leftrightarrow a \cdot c < b \cdot c$

3. $a < b$ ve (and) $c < 0 \Leftrightarrow a \cdot c > b \cdot c$

4. $a < b$ ve (and) $c > 0 \Leftrightarrow \frac{a}{c} < \frac{b}{c}$

5. $a < b$ ve (and) $c < 0 \Leftrightarrow \frac{a}{c} > \frac{b}{c}$

6. $a, b \in R^+$ ve (and) $a < b \Leftrightarrow \frac{1}{a} > \frac{1}{b}$

7. $c < a$ ve (and) $a < b \Rightarrow c < b$

8. $n \in Z^+$, $0 < b < a \Rightarrow 0 < b^n < a^n$

9. $n \in Z^+$

i. $a < b < 0 \Rightarrow a^{2n-1} < b^{2n-1} < 0$

ii. $a < b < 0 \Rightarrow a^{2n} > b^{2n} > 0$

10. $n \in Z$ ve (and) $n > 1$

i. $0 < a < 1 \Rightarrow 0 < a^n < a < 1$

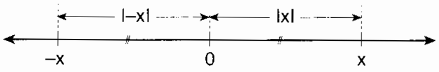
ii. $-1 < a < 0$ veya (or) $\Rightarrow a > 1 \Rightarrow a^n > a$

11. $n \in Z^+$, $a < -1 \Rightarrow a^{2n-1} < a < a^{2n}$

MUTLAK DEĞER / ABSOLUTE VALUE

Tanım: Sayı doğrusunda bir sayının belirttiği noktanın başlangıç noktasından olan uzaklığına bu sayının **mutlak değeri** denir. a'nın mutlak değeri $|a|$ şeklinde gösterilir.

Definition: The distance between a point on the number line indicated by a number and the origin is called the absolute value of that number. The absolute value of a is denoted by $|a|$.



$$|-x| = |x|$$

$$\Rightarrow |x| = \begin{cases} x, & x > 0 \\ 0, & x = 0 \\ -x, & x < 0 \end{cases}$$

Mutlak Değerin Temel Özellikleri
The Basic Properties of the Absolute Value

1. $n \in N^+$, $a \in R - \{0\}$

$|a^n| = |a|^n$

n tek bir doğal sayı ise $|a^n| \neq a^n$ dir.

If n is an odd natural number, $|a^n| \neq a^n$

n çift bir doğal sayı ise $|a^n| = a^n$ dir.

If n is an even natural number, $|a^n| = a^n$

2. $a, b \in R^+$, $a > b$

$$\Rightarrow \begin{cases} |a-b| = a-b \\ |b-a| = -(b-a) = a-b \end{cases}$$

$|a - b| = |b - a|$

3. $a, b, c \in R$

$|a| + |b| + |c| = 0 \Rightarrow a = 0, b = 0, c = 0$

4. **i.** $\forall x \in R \Rightarrow \sqrt{x^2} = |x|$

ii. $\forall x \in R \Rightarrow |x| \geq 0$

5. **i.** $|x \cdot y| = |x| \cdot |y|$

ii. $\left|\frac{x}{y}\right| = \frac{|x|}{|y|}$, $y \neq 0$

iii. $|x + y| \leq |x| + |y|$

6. **i.** $|x^n| = |x|^n$

ii. $|x|^{2n} = x^{2n}$, $n \in Z$

Mutlak Değer Denklemleri / Absolute Value Equations

1. $a > 0,\ |x| = a \Rightarrow \begin{cases} x_1 = a \\ x_2 = -a \end{cases}$

2. $b \in R^+,\ |x - a| = b \Rightarrow \begin{cases} x - a = b \Rightarrow x_1 = a + b \\ x - a = -b \Rightarrow x_2 = a - b \end{cases}$

3. $\left.\begin{matrix} x < 0 \\ y > 0 \end{matrix}\right\} \Rightarrow |xy| = -xy$

$\left.\begin{matrix} x < 0 \\ y < 0 \end{matrix}\right\} \Rightarrow |xy| = xy$

Mutlak Değer Eşitsizlikleri
Inequalities Involving Absolute Value

1. $a \in R^+$

$|x| < a \Leftrightarrow -a < x < a$

2. $a \in R^+$

$|x| > a \Rightarrow \begin{cases} x > a \\ x < -a \end{cases}$

3. $a \in R^+\ |x - b| < a \Rightarrow -a < x - b < a$

$\Rightarrow b - a < x < a + b$

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $\frac{3}{5} + 2x = 2\frac{3}{5} \Rightarrow$ **$x = ?$**

Yanıt / The answer is **1**

2. $2x(x-2) - x(2x-1) - x + 1 = 13$

$\Rightarrow$ **$x = ?$**

Yanıt / The answer is **–3**

3. $x \in R^-$

$2 - (x\,[x - (2x - 3)] + 4) = 2(5 - x) + 3x$

$\Rightarrow$ **$x = ?$**

Yanıt / The answer is **–2**

4. $3x + 5\cdot[2 - (3 + x)] = 9 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **–7**

5. $a\cdot(5 - x) = 2ax + 3$

$x_1 = 2 \Rightarrow$ **$a = ?$**

Yanıt / The answer is **–3**

6. $x - (1 - 2x) - x - 2 = -(-3x - 2)$

$\Rightarrow$ **$x = ?$**

Yanıt / The answer is **–5**

7. $m \neq n$

$2m + n(x - 3) = 2n + m(x - 3)$

$\Rightarrow$ **x = ?**

Yanıt / The answer is **5**

8. $m \neq 1$,

$m \cdot (x + 5) = x + 5$

$\Rightarrow$ **x = ?**

Yanıt / The answer is **–5**

9. $\frac{x+1}{3} - \frac{3x-1}{5} = x - 2 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **2**

10. $\frac{3x-1}{2} - \frac{2x-5}{3} = 2 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **1**

11. $\frac{1-2x}{4} - \frac{x-2}{2} = 3 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is $-\frac{7}{4}$

12. $\frac{3x-1}{2} = 2 - \frac{2x+3}{2} + \frac{x+3}{6} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is $\frac{9}{14}$

13. $\frac{5}{2}-\frac{x-1}{3}-\frac{x-2}{4}+x=5 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **4**

14. $\frac{2x+5}{3}-\frac{3x+1}{2}+3=0 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **5**

15. $\frac{3x-10}{2}-\frac{3-5x}{3}=\frac{1}{3} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **2**

16. $\frac{4x-3}{3}-\frac{x+1}{2}=\frac{2x-1}{5}-\frac{x-3}{6} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **3**

17. $\frac{3x}{2}+3=\frac{2x}{3}-2 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **–6**

18. $\frac{x}{3}-2=\frac{x+2}{6}+1 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **20**

19. $\frac{x-2}{3}-\frac{x-1}{5}=2-\frac{2x-3}{15} \Rightarrow$ **x = ?**

Yanıt / The answer is **10**

20. $\frac{1}{x-a}+\frac{1}{x-3}+\frac{1}{x-2}=1$

$x_1=5 \Rightarrow$ **a = ?**

Yanıt / The answer is **−1**

21. $\frac{1+\frac{x}{2}}{1-\frac{x}{2}}-\frac{5}{x-2}=8 \Rightarrow$ **x = ?**

Yanıt / The answer is **1**

22. $\frac{x}{3}-\frac{x-\frac{1}{3}}{2}+1=x \Rightarrow$ **x = ?**

Yanıt / The answer is **1**

23. $\frac{1-\frac{3}{2}}{1+\frac{1}{2}}-\frac{x}{x-\frac{1}{2}}=-1 \Rightarrow$ **x = ?**

Yanıt / The answer is **−1**

24. $\frac{0{,}5\cdot x-0{,}5}{0{,}1}+\frac{0{,}2\cdot x}{0{,}01}=5 \Rightarrow$ **x = ?**

Yanıt / The answer is **0,4**

1. $\dfrac{-3x+2}{4}-\dfrac{x-3}{8}=7 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **–7**

2. $\dfrac{1}{x-3}+\dfrac{1}{x-4}=\dfrac{1}{x-a}+1$

ÇK(SS) = {6} ⇒ **a = ?**

Yanıt / The answer is **12**

3. $\dfrac{2-2(x-3)}{-x+4}+x=4 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **2**

4. $5x-\dfrac{4}{3}(5x-4)=9 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is $\mathbf{-\dfrac{11}{5}}$

5. $\dfrac{2x-3}{2}-\dfrac{x+1}{4}=\dfrac{1}{8} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is $\mathbf{\dfrac{5}{2}}$

6. $3(x+1)-2(2x-1)=3-3x \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **–1**

7. $-2(1-x)+2-x-(2-x)=24 \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **13**

8.

$$\left.\begin{array}{r} x+my=3\\ x-y=3\\ \text{ÇK(SS)}=R \end{array}\right\} \Rightarrow \mathbf{m=?}$$

Yanıt / The answer is **–1**

9. $x>0$,

$$\frac{\frac{1}{x}+4+4x}{\frac{1}{2x}+1}=4 \Rightarrow \mathbf{x=?}$$

Yanıt / The answer is $\mathbf{\frac{1}{2}}$

10.

$$\frac{5}{1-\frac{1}{2+\frac{a+5}{2}}}=3 \Rightarrow \mathbf{a=?}$$

Yanıt / The answer is **–12**

11.

$$\frac{5}{3+\frac{2}{1+\frac{x+1}{5}}}=1 \Rightarrow \mathbf{x=?}$$

Yanıt / The answer is –1

12. $x<0$,

$$\frac{x}{1+\frac{1}{x}}-\frac{1-2x}{1+x}=2 \Rightarrow \mathbf{x=?}$$

Yanıt / The answer is $-\sqrt{3}$

13. $2-\dfrac{2-\dfrac{2-\dfrac{x}{3}}{3}}{3}=2 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **-12**

14. $\dfrac{x+2}{x-2}-\dfrac{1}{x}=\dfrac{2}{x^2-2x} \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **$\{-1\}$**

15. $3-\dfrac{15}{2-\dfrac{x}{3x-1}}=3 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\varnothing$

16. $\dfrac{x+3}{x^2-1}-\dfrac{1}{x-1}-\dfrac{2}{x^2-1}=0 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **$R-\{-1, 1\}$**

17. $(x-y+1)^4+(x+y+3)^8=0 \Rightarrow$ **$x \cdot y = ?$**

Yanıt / The answer is **2**

18. $4x^2-12x+9+(2x+3y)^2=0 \Rightarrow$ **$y = ?$**

Yanıt / The answer is **-1**

19. $a \neq b,$

$$\frac{ax+2b}{b}-\frac{bx+2a}{a}=\frac{1}{a}-\frac{1}{b} \Rightarrow \mathbf{x=?}$$

Yanıt / The answer is $\mathbf{-\frac{1}{a+b}}$

20. $\frac{1}{a}-\frac{2}{x}=\frac{1}{x}-\frac{1}{b} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is $\mathbf{\frac{3ab}{a+b}}$

21. $\left.\begin{aligned}(a-1)x-y&=1\\ ax-2y&=a\end{aligned}\right\} \Rightarrow \mathbf{x=?}$

Yanıt / The answer is **−1**

22. $\left.\begin{aligned}(a+c)x-by&=b\cdot c\\ x+y&=a+b\end{aligned}\right\} \Rightarrow \mathbf{(x,y)=?}$

Yanıt / The answer is **(b, a)**

23. $\left.\begin{aligned}\frac{a+b}{2}+a&=10\\ \frac{a-b}{2}+b&=3\end{aligned}\right\} \Rightarrow \mathbf{b=?}$

Yanıt / The answer is **−1**

24. $\left.\begin{aligned}2x+1&=3y\\ x-y&=2\end{aligned}\right\} \Rightarrow \mathbf{x+y=?}$

Yanıt / The answer is **12**

1. $$\left.\begin{array}{l}\dfrac{3}{x}-y=4\\[2mm] \dfrac{2}{x}+3y=10\end{array}\right\}\Rightarrow \mathbf{y=?}$$

Yanıt / The answer is **2**

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2. $$\left.\begin{array}{l}\dfrac{x}{3}+\dfrac{y}{4}=\dfrac{1}{6}\\[2mm] \dfrac{x}{4}+\dfrac{y}{3}=\dfrac{5}{12}\end{array}\right\}\Rightarrow \mathbf{x\cdot y=?}$$

Yanıt / The answer is **–2**

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3. $$\left.\begin{array}{l}\dfrac{3}{x}-\dfrac{5}{y}=\dfrac{19}{6}\\[2mm] \dfrac{2}{x}+\dfrac{1}{y}=\dfrac{2}{3}\end{array}\right\}\Rightarrow \mathbf{x+y=?}$$

Yanıt / The answer is **–1**

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4. $$\left.\begin{array}{l}mx+ny=3\\ nx-my=-1\end{array}\right\},\ (x,y)=(2,-1)$$

$\Rightarrow \mathbf{m\cdot n=?}$

Yanıt / The answer is **–1**

---

5. $x, y \in N^{+}$,

$$\frac{1}{x-y}+x=1,\ \frac{x}{x-y}=-2\ \Rightarrow\ \mathbf{x+y=?}$$

Yanıt / The answer is **5**

---

6. $\dfrac{x}{2}+\dfrac{2y}{3}=3$

$x-4y=10\ \Rightarrow\ \mathbf{y=?}$

Yanıt / The answer is $\mathbf{-\frac{3}{4}}$

7. $a \in R^-$,

$3x + 2ay = -5,\ ax + 6y = 4,$

$ÇK(SS) = \varnothing \Rightarrow$ **$a = ?$**

Yanıt / The answer is **–3**

8. $\frac{x}{a} + \frac{y}{b} = 2$

$bx - ay = 0 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **a**

9. $\frac{2}{x} - \frac{3}{y} = 13$

$\frac{5}{x} + \frac{2}{y} = 4 \Rightarrow$ **$x \cdot y = ?$**

Yanıt / The answer is **$-\frac{1}{6}$**

10. $\frac{1}{x} + \frac{1}{y} = 5$

$\frac{3}{y} + \frac{2}{x} = 7 \Rightarrow$ **$y = ?$**

Yanıt / The answer is **$-\frac{1}{3}$**

11. $x + 3y = 11$

$x - y - \frac{1}{x+3y} = -\frac{56}{11}$

$\Rightarrow$ **$x + y = ?$**

Yanıt / The answer is **3**

12. $x^2 - y^2 = 12$

$\frac{1}{x-y} + \frac{1}{x+y} = x + 5 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **–6**

13. $\left.\begin{array}{r} x\cdot y = x+12 \\ x\cdot y^2 = x+72 \end{array}\right\} \Rightarrow \mathbf{y = ?}$

Yanıt / The answer is $\mathbf{\frac{x+72}{x+12}}$

14. $\left.\begin{array}{r} \frac{1}{x}-\frac{3}{y}=5 \\ \frac{5}{x}+\frac{1}{y}=1 \end{array}\right\} \Rightarrow \mathbf{x-y = ?}$

Yanıt / The answer is $\mathbf{\frac{8}{3}}$

15. $\left.\begin{array}{l} x+z=4 \\ y+z=5 \\ x-y=2z \end{array}\right\} \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is $\mathbf{\frac{9}{2}}$

16. a, b, c ∈ R^+

$\left.\begin{array}{l} b=2a-1 \\ c=2b+1 \\ b+c=16 \end{array}\right\} \Rightarrow \mathbf{b+a = ?}$

Yanıt / The answer is **8**

17. $\left.\begin{array}{l} 2a+b+c=7 \\ a+2b+c=8 \\ a+b+2c=9 \end{array}\right\} \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **1**

18. $\left.\begin{array}{l} 3a+4b=5c \\ 4a+3b=4c \\ a+b=27 \end{array}\right\} \Rightarrow \mathbf{c = ?}$

Yanıt / The answer is **21**

19. $\left.\begin{array}{l}2a+b=c\\ a+c=3b\\ a+b+c=12\end{array}\right\} \Rightarrow \mathbf{c=?}$

Yanıt / The answer is **7**

20. $\left.\begin{array}{l}a+b=4\\ b+c=8\\ a+c=6\end{array}\right\} \Rightarrow \mathbf{b=?}$

Yanıt / The answer is **3**

21. $\left.\begin{array}{l}a+b=5\\ 2b-c=5\\ c-a=2\end{array}\right\} \Rightarrow \mathbf{a\cdot b\cdot c=?}$

Yanıt / The answer is **12**

22. $\left.\begin{array}{l}a\cdot b=8\\ a\cdot c=12\\ b-4c=20\end{array}\right\} \Rightarrow \mathbf{a=?}$

Yanıt / The answer is **–2**

23. $\left.\begin{array}{l}ax+ay=2\\ bx+by=5\\ x+y=2\end{array}\right\} \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is $\mathbf{\frac{7}{2}}$

24. $a+2b+c=8$

$a-2b+c=0 \Rightarrow \mathbf{a+b+c=?}$

Yanıt / The answer is **6**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $2(x-1)+x+6=25 \Rightarrow$ **ÇK(SS) = ?**

A) {4} B) {5} C) {6} D) {7} E) {8}

2. $\dfrac{x-1}{3}+\dfrac{x+1}{2}=6 \Rightarrow$ **ÇK(SS) = ?**

A) {5} B) {6} C) {7} D) {8} E) {9}

3. $\dfrac{3}{x}+8=\dfrac{2}{x}+10 \Rightarrow$ **x = ?**

A) $\dfrac{1}{3}$ B) $\dfrac{1}{2}$ C) 1 D) 2 E) 3

4. $\dfrac{5}{2x-4}-\dfrac{2}{x+1}=0 \Rightarrow$ **x = ?**

A) –10 B) –11 C) –12 D) –13 E) –14

5. $\dfrac{x-1}{2}+\dfrac{2x-1}{3}+\dfrac{3x}{4}=2x+1 \Rightarrow$ **x = ?**

A) –20 B) –21 C) –22 D) –23 E) –24

6. $-2(1-x)+3(x-2)-(2x+1)=3 \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

7. $\dfrac{x^2-8}{x-3}+\dfrac{1}{3-x}=0 \Rightarrow$ **ÇK(SS) = ?**

A) {–3, 3} B) {0} C) {–3}
D) {3} E) ∅

8. $x \neq 2$,

$(2x-4)(x-3)=(x-2)\cdot 4 \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

9. $\frac{4}{x-1}+\frac{6}{x+2}+\frac{3+x}{1-x}=3 \Rightarrow$ **x = ?**

A) $-\frac{1}{4}$ B) $-\frac{1}{2}$ C) 0 D) $\frac{1}{2}$ E) $\frac{1}{4}$

10. $\frac{x^2-x-12}{x+3}=0 \Rightarrow$ **ÇK(SS) = ?**

A) {1} B) {−3, 4} C) {−3}
D) R E) {4}

11. $\frac{x}{2}+\frac{x}{3}+\frac{x}{4}-\frac{5x}{12}=\frac{4}{3} \Rightarrow$ **ÇK(SS) = ?**

A) {1} B) {2} C) {3} D) {4} E) {5}

12. $3x + 3(1 - x) = 3 \Rightarrow$ **ÇK(SS) = ?**

A) {0} B) {−1, 0} C) ∅
D) R E) {3}

13. $\frac{3x}{x-1}+\frac{2x+1}{1-x}-1=1 \Rightarrow$ **ÇK(SS) = ?**

A) {0} B) {−1, 1} C) ∅
D) R E) {1}

14. $a(x - 2) + 2(x + b) = 0$,
ÇK(SS) = R $\Rightarrow$ **a + b = ?**

A) −4 B) −2 C) 0
D) 2 E) 4

15. $\frac{ax-1}{3}-\frac{4x-b}{4}=\frac{5}{6} \Rightarrow$ **a + b = ?**

A) $\frac{20}{3}$ B) 7 C) $\frac{22}{3}$
D) $\frac{23}{3}$ E) 8

16. $x+\frac{1}{1+\frac{1}{x}}=\frac{x}{x+1} \Rightarrow$ **ÇK(SS) = ?**

A) {0} B) {−1} C) {−1, 0}
D) ∅ E) R

Yanıtlar / Answers

1. D	4. D	7. C	10.E	13. C	16. D
2. C	5. C	8. E	11. B	14. A	
3. B	6. D	9. B	12. D	15. D	

1. $\frac{3x-2}{3}+\frac{5-4x}{6}=1 \Rightarrow \mathbf{x=?}$

A) $\frac{1}{2}$ B) 1 C) $\frac{3}{2}$

D) 2 E) $\frac{5}{2}$

2. $\frac{18}{4+\frac{8}{1+x}}=3 \Rightarrow \mathbf{x=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $\frac{1+\frac{x+1}{4}}{3}+3=6 \Rightarrow \mathbf{x=?}$

A) 30 B) 31 C) 32 D) 33 E) 34

4. $\frac{x^2}{1-2x}+1=x-1 \Rightarrow$ **ÇK(SS) = ?**

A) $\left\{\frac{2}{3},1\right\}$ B) $\left\{\frac{1}{3},-1\right\}$ C) $\{-1,1\}$

D) $\left\{1,\frac{4}{3}\right\}$ E) $\varnothing$

5. $\left.\begin{array}{l} x-2y=-11 \\ x+y=7 \end{array}\right\} \Rightarrow$ **ÇK(SS) = ?**

A) {(−1, 1)} B) {(1, 2)} C) {(1, 3)}

D) {(2, 5)} E) {(1, 6)}

6. $\left.\begin{array}{l} -2x+y=14 \\ x+2y=8 \end{array}\right\} \Rightarrow$ **ÇK(SS) = ?**

A) {(−4, 6)} B) {(−3, 5)} C) {(−1, 1)}

D) {(−5, 7)} E) {(−4, 0)}

7. $\left.\begin{array}{l} \frac{1}{2}x-2y=-4 \\ 2x+3y=6 \end{array}\right\} \Rightarrow$ **ÇK(SS) = ?**

A) {(−2, 0)} B) {(0, 2)} C) {(−2, 2)}

D) {(−3, 0)} E) {(−1, 1)}

8. $\left.\begin{array}{l} \frac{3}{4}x+\frac{1}{2}y=\frac{13}{4} \\ \frac{5}{4}x+\frac{3}{2}y=\frac{1}{4} \end{array}\right\} \Rightarrow \mathbf{x+y=?}$

A) 7 B) $\frac{7}{2}$ C) $\frac{7}{4}$ D) $\frac{7}{6}$ E) $\frac{7}{8}$

9. $\left.\begin{array}{r} 5x-3y=6 \\ -10x+6y=-12 \end{array}\right\} \Rightarrow \textbf{ÇK(SS)}=\textbf{?}$

A) $\{(1, 2)\}$ B) $\{(-1, 2)\}$ C) $\{(-2, 2)\}$ D) $\varnothing$ E) R

10. $(a-1)x+by=4,$

$(a+1)x+(b-1)y=8$

ÇK(SS) = R $\Rightarrow$ **a + b = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

11. $\left.\begin{array}{r} 6x+5y=8 \\ 18x+15y=26 \end{array}\right\} \Rightarrow \textbf{ÇK(SS)}=\textbf{?}$

A) $\{(-2, 2)\}$ B) $\{(2, -2)\}$ C) $\{(0, 2)\}$ D) $\varnothing$ E) R

12. $ax+by-y=12$

$3ax+by=8$

ÇK(SS) = $\varnothing$ $\Rightarrow$ **b = ?**

A) $\frac{1}{2}$ B) 1 C) $\frac{3}{2}$ D) 2 E) $\frac{5}{2}$

13. $(a+2)x-3y=9,$

$(a-1)x+6y=12$

ÇK(SS) = $\varnothing$ $\Rightarrow$ **a = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

14. $\frac{1}{x}-\frac{2}{y}=\frac{7}{3}$

$\frac{3}{x}-\frac{1}{y}=-\frac{1}{2} \Rightarrow \mathbf{x=?}$

A) -2 B) $-\frac{3}{2}$ C) -1 D) 1 E) 2

15. $\frac{2}{x}+\frac{3}{y}=\frac{13}{2}$

$\frac{3}{x}-\frac{1}{y}=\frac{3}{2} \Rightarrow \textbf{ÇK(SS)}=\textbf{?}$

A) $\{(1,-1)\}$ B) $\left\{(1,\frac{1}{3})\right\}$ C) $\left\{(1,\frac{2}{3})\right\}$ D) $\left\{(-1,-\frac{1}{3})\right\}$ E) $\left\{(-\frac{2}{3},1)\right\}$

16. $\left.\begin{array}{l} -\frac{7}{x}+\frac{3}{y}=13 \\ \frac{3}{x}+\frac{1}{y}=3 \end{array}\right\} \Rightarrow \mathbf{\frac{x-y}{xy}}=\mathbf{?}$

A) 1 B) 2 C) 3 D) 4 E) 5

Yanıtlar / Answers

1. E	4. A	7. B	10.B	13. B	16. D
2. C	5. E	8. C	11. D	14. B	
3. B	6. A	9. E	12. C	15. C	

1. $-3x + 12 = 6 \Rightarrow \mathbf{x = ?}$

A) -2 B) -1 C) 0 D) 1 E) 2

2. $2x + 1 = x + 6 \Rightarrow \mathbf{x = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $4x - 11 = 2x + 4 \Rightarrow \mathbf{x = ?}$

A) $\frac{15}{2}$ B) 7 C) $\frac{13}{2}$ D) 6 E) $\frac{11}{2}$

4. $3x - 2 = 5x + 4 \Rightarrow \mathbf{x = ?}$

A) 1 B) 0 C) -1 D) -2 E) -3

5. $2(x + 3) - 2 = 3x + 1 \Rightarrow$ **ÇK(SS) = ?**

A) $\{1\}$ B) $\{3\}$ C) $\{4\}$ D) $\{5\}$ E) $\{7\}$

6. $4(x - 2) + 2x = 2(x + 6) - 13 \Rightarrow$ **ÇK(SS) = ?**

A) $\left\{\frac{7}{4}\right\}$ B) $\left\{\frac{7}{3}\right\}$ C) $\left\{\frac{7}{2}\right\}$

D) $\{7\}$ E) $\{5\}$

7. $2x + 3(x + 2) = 6(x - 4) - 3x \Rightarrow \mathbf{x = ?}$

A) -9 B) -11 C) -13 D) -15 E) -17

8. $4x + \frac{1}{3}(2x - 4) = 8 \Rightarrow \mathbf{x = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

9. $\frac{x-4}{3}+\frac{x-2}{2}=\frac{2x-4}{4} \Rightarrow \mathbf{x=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $\frac{2x+3}{5}-\frac{x-1}{2}=\frac{12}{5} \Rightarrow \mathbf{x=?}$

A) −15 B) −13 C) −11 D) −9 E) −7

11. $\frac{2x}{x+2}=0{,}1\overline{6} \Rightarrow \mathbf{x=?}$

A) $\frac{1}{11}$ B) $\frac{2}{11}$ C) $\frac{3}{11}$ D) $\frac{4}{11}$ E) $\frac{5}{11}$

12. $3+\frac{4}{2+\frac{1}{x}}=4 \Rightarrow \mathbf{x=?}$

A) 1 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{5}$

13. $\frac{x}{x+2}-\frac{2}{1+\frac{3}{x-1}}=1 \Rightarrow$ **ÇK(SS) = ?**

A) {4} B) {3} C) {2} D) {0} E) {−3}

14. $\frac{1}{x-2}+\frac{4}{x+1}+\frac{x-3}{x-2}=\frac{4}{5} \Rightarrow$ **ÇK(SS) = ?**

A) {−3} B) {−7} C) {−9}
D) {−17} E) {−21}

15. $\frac{2}{x}+\frac{x}{x-2}-\frac{x+2}{x}=\frac{2}{5} \Rightarrow$ **ÇK(SS) = ?**

A) {5} B) {7} C) {9} D) {11} E) {13}

16. $a \neq b$,

$a+\frac{x}{b}=b+\frac{x}{a} \Rightarrow \mathbf{x=?}$

A) $b-a$ B) $a+b$ C) $\frac{a}{b}$ D) $\frac{-b}{a}$ E) $-ab$

Yanıtlar / Answers

1. E	**4. E**	**7. D**	**10. B**	**13. D**	**16. E**
2. E	**5. B**	**8. B**	**11. B**	**14. E**	
3. A	**6. A**	**9. D**	**12. B**	**15. B**	

1. $3(2x-1)-4(x+3)=13 \Rightarrow$ **ÇK(SS) = ?**

A) {7} B) {12} C) {13} D) {14} E) {16}

2. $\frac{x+2}{4}-\frac{x-3}{3}=5 \Rightarrow$ **ÇK(SS) = ?**

A) {–42} B) {–38} C) {–28} D) {28} E) {38}

3. $2(3x-7)=3(2x+4)-26 \Rightarrow$ **ÇK(SS) = ?**

A) ∅ B) R C) 0 D) 7 E) 14

4. $4(2x+3)+x=3(3x-2)+5 \Rightarrow$ **ÇK(SS) = ?**

A) 13 B) 10 C) 0 D) R E) ∅

5. $\frac{x-2}{2}-\frac{x+5}{3}+\frac{2x-4}{4}=x-1 \Rightarrow$ **x = ?**

A) –8 B) –6 C) 1 D) 6 E) 8

6. $\frac{3}{2x+1}-\frac{4}{3x-5}=0 \Rightarrow$ **x = ?**

A) 15 B) 16 C) 17 D) 18 E) 19

7. $\frac{2}{x}+7=\frac{1}{x}-1 \Rightarrow$ **x = ?**

A) $-\frac{1}{8}$ B) $-\frac{1}{4}$ C) $-\frac{1}{2}$ D) $\frac{1}{4}$ E) $\frac{1}{8}$

8. $\frac{2-3x}{6}-\frac{x-3}{3}=-7 \Rightarrow$ **x = ?**

A) –15 B) –10 C) 5 D) 10 E) 15

9. $\dfrac{x^2-1}{x-2}+\dfrac{3}{2-x}=0 \Rightarrow$ **ÇK(SS) = ?**

A) {−2}
B) {2}
C) {0}
D) {−2, 2}
E) ∅

10. $\dfrac{2}{x}+\dfrac{4}{x-2}-\dfrac{x+2}{x}=3 \Rightarrow$ **x = ?**

A) 1
B) 2
C) 3
D) 4
E) 5

11. $(x-2)\cdot(2x-3)=(x-2)\cdot x \Rightarrow$ **ÇK(SS) = ?**

A) {3}
B) {2}
C) {2, 3}
D) {−2}
E) {−3}

12. $m(x-1)+3(x+2n)+15=0$

ÇK(SS) = R $\Rightarrow$ **m + n = ?**

A) −6
B) −1
C) 0
D) 1
E) 6

13. $m \neq n$,

$\dfrac{x+m}{n}+\dfrac{x-n}{m}=0 \Rightarrow$ **x = ?**

A) n
B) m
C) m − n
D) n − m
E) m·n

14. $\dfrac{x^2-2x-15}{x+3}=0 \Rightarrow$ **ÇK(SS) = ?**

A) {3}
B) {5}
C) {3, 5}
D) {−3}
E) {−5}

15. $\dfrac{mx-2}{2}-\dfrac{3x-n}{3}=1$

ÇK(SS) = R $\Rightarrow$ **m + n = ?**

A) 4
B) 6
C) 8
D) 10
E) 12

16. $\dfrac{0{,}36}{x}=\dfrac{1}{0{,}01}+\dfrac{1}{0{,}125} \Rightarrow$ **x = ?**

A) $\dfrac{1}{30}$
B) $\dfrac{1}{50}$
C) $\dfrac{1}{100}$
D) $\dfrac{1}{200}$
E) $\dfrac{1}{300}$

Yanıtlar / Answers

1. D	**4. E**	**7. A**	**10. C**	**13. D**	**16. E**
2. A	**5. A**	**8. D**	**11. C**	**14. B**	
3. B	**6. E**	**9. A**	**12. A**	**15. C**	

. $\frac{4x}{0,4}+\frac{5x}{0,5}=\frac{x}{0,1}+10 \Rightarrow \mathbf{x=?}$

A) $\frac{1}{10}$ B) $\frac{1}{5}$ C) $\frac{1}{2}$ D) 1 E) 0

2. $\frac{4-x}{3}-\frac{x-5}{4}=\frac{5}{6} \Rightarrow \mathbf{x=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $a \in R$,

$\frac{x-3}{2}+\frac{x-5}{3}-\frac{x-a}{5}=\frac{1}{3}$, $x_1=3 \Rightarrow \mathbf{a=?}$

A) 8 B) 7 C) 6 D) 5 E) 4

4. *$5-[-3-(1-x)]=x-[2x-(3x+3)] \Rightarrow$* ***ÇK(SS) = ?***

A) \{1\} B) \{2\} C) \{3\} D) \{4\} E) ∅

5. $4+\frac{12}{2-\frac{3}{x-1}}=8 \Rightarrow \mathbf{x=?}$

A) –2 B) –1 C) 0 D) 1 E) 2

6. $\frac{0,17}{x}=\frac{0,51}{0,3} \Rightarrow \mathbf{x=?}$

A) –0,1 B) –0,2 C) –1 D) 0,1 E) 10

7. $\frac{2x+1}{3x-2}-\frac{x+1}{2-3x}=0 \Rightarrow$ **ÇK(SS) = ?**

A) $\left\{-\frac{2}{3}\right\}$ B) $\left\{-\frac{1}{3}\right\}$ C) $\{0\}$ D) $\left\{\frac{3}{2}\right\}$ E) $\{6\}$

8. $\left.\begin{aligned} a+b+c&=2\\ 2a&=3b\\ \frac{a+c}{6}&=1 \end{aligned}\right\} \Rightarrow \mathbf{c=?}$

A) –12 B) –8 C) 8 D) 12 E) 14

9. $\left.\begin{array}{l}2x+3y=10\\3x+2y=4\end{array}\right\}\Rightarrow \mathbf{x^2-y^2=?}$

A) $-\frac{84}{5}$ B) -12 C) -8 D) -6 E) $-\frac{8}{5}$

10. $\left.\begin{array}{l}\dfrac{2}{2a-b+3}=1\\[2mm]\dfrac{1}{2+b-2a+x}=\dfrac{1}{2}\end{array}\right\}\Rightarrow \mathbf{x=?}$

A) 2 B) 1 C) –1 D) –2 E) –3

11. $x+y=10$

$y+z=24$

$x+z=16 \Rightarrow \mathbf{x=?}$

A) 1 B) 2 C) 7 D) 8 E) 9

12. $x+y-z=27$

$x-y+z=9$

$\Rightarrow \mathbf{2x+4y-4z=?}$

A) 18 B) 36 C) 72 D) 82 E) 92

13. $(x-3)^2+(3y+15)^2=0 \Rightarrow \mathbf{x-y=?}$

A) 1 B) 2 C) 4 D) 8 E) 16

14. $\dfrac{3}{3-a}+\dfrac{3a-6}{a^2-5a+6}=0 \Rightarrow$ **ÇK(SS) = ?**

A) ∅ B) {3} C) {0}

D) R E) R – {2, 3}

15. $\left(\dfrac{\frac{a-3}{a}}{4}+2\right)\cdot x-2=2,\ x_1=1 \Rightarrow \mathbf{a=?}$

A) 6 B) 4 C) 2 D) –2 E) –4

16. $\dfrac{\frac{2x}{5}+1}{4}+\dfrac{\frac{x}{4}-1}{5}=\dfrac{x}{5}-\dfrac{x-1}{20} \Rightarrow$ **ÇK(SS) = ?**

A) ∅ B) {–1} C) {0}

D) {1} E) R

Yanıtlar / Answers

1. D	**4. B**	**7. A**	**10. C**	**13. D**	**16. E**
2. C	**5. A**	**8. D**	**11. A**	**14. E**	
3. A	**6. D**	**9. A**	**12. C**	**15. A**	

1. $\frac{x-3}{2}-\frac{x-1}{3}=\frac{2x+7}{6} \Rightarrow \mathbf{x=?}$

A) −18 B) −14 C) −8 D) −7 E) −3

2. $x^2+\frac{1}{3-x}=9-\frac{1}{x-3} \Rightarrow \textbf{ÇK(SS) = ?}$

A) {−3} B) {3} C) {−3, 3} D) ∅ E) R

3. $\frac{3x-1}{6}-\frac{2x+1}{8}=\frac{3-x}{12} \Rightarrow \mathbf{x=?}$

A) $\frac{9}{8}$ B) $\frac{11}{8}$ C) $\frac{13}{8}$ D) $\frac{15}{8}$ E) $\frac{17}{8}$

4. $\dfrac{6}{1-\dfrac{5}{1-\dfrac{2}{x+1}}}=3 \Rightarrow \mathbf{x=?}$

A) $-\frac{4}{3}$ B) $-\frac{2}{3}$ C) $\frac{1}{3}$ D) $\frac{2}{3}$ E) $\frac{4}{3}$

5. $\dfrac{6}{2+\dfrac{3}{1+\dfrac{x}{2}}}=2 \Rightarrow \mathbf{x=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

6. $\dfrac{\dfrac{\frac{x}{2}-1}{2}+1}{3}+2=4 \Rightarrow \mathbf{x=?}$

A) 18 B) 20 C) 22 D) 24 E) 26

7. $\left.\begin{array}{l} x-3y=4 \\ 2x+y=8 \end{array}\right\} \Rightarrow \textbf{ÇK(SS) = ?}$

A) {(4, 0)} B) {(0, 4)} C) {(3, 1)} D) {(1, 3)} E) {4}

8. $\left.\begin{array}{l} 2x-3y=9 \\ x+2y=1 \end{array}\right\} \Rightarrow \textbf{ÇK(SS) = ?}$

A) {(1, 3)} B) {(−2, 3)} C) {(−1, 3)} D) {(3, 0)} E) {(3, −1)}

9. $\left.\begin{aligned} 2x - 3y &= 8 \\ 3x + 4y &= 12 \end{aligned}\right\} \Rightarrow \mathbf{x \cdot y = ?}$

A) –2 B) –1 C) 0 D) 2 E) 4

10. $\left.\begin{aligned} 3x - 2y &= 4 \\ -6x + 4y &= 12 \end{aligned}\right\} \Rightarrow \textbf{ÇK(SS) = ?}$

A) {(0, 0)} B) {(1, 2)} C) {(1, 1)}
D) ∅ E) R

11. $\left.\begin{aligned} 4x + 2y &= 3 \\ 8x + 4y &= 6 \end{aligned}\right\} \Rightarrow \textbf{ÇK(SS) = ?}$

A) ∅ B) R C) {(0, 0)}
D) {(–1, –1)} E) {(1, 1)}

12. $(m - 2)x + 4y = 2,$

$6x - (n + 1)y = 3,$

ÇK(SS) = R ⇒ **m + n = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

13. $(m + 1)x - 3y = 4,$

$(3 - 2m)x + 5y = 12,$

ÇK(SS) = ∅ ⇒ **m = ?**

A) 3 B) 6 C) 7 D) 10 E) 14

14. $\frac{x-1}{4} + \frac{y}{2} = 2$

$\frac{x}{3} - \frac{y-1}{2} = \frac{7}{6} \Rightarrow \mathbf{x + y = ?}$

A) 4 B) 5 C) 6 D) 7 E) 8

15. $\frac{1}{x} + \frac{1}{y} = 3$

$\frac{3}{x} - \frac{2}{y} = 4 \Rightarrow \mathbf{x = ?}$

A) $-\frac{1}{2}$ B) $-\frac{1}{3}$ C) $\frac{1}{2}$
D) $\frac{1}{3}$ E) $\frac{1}{4}$

16. $\frac{2}{x} - \frac{3}{y} = -4$

$\frac{-5}{x} + \frac{2}{y} = \frac{9}{2} \Rightarrow \mathbf{x \cdot y = ?}$

A) –4 B) –2 C) 2 D) 4 E) 6

Yanıtlar / Answers

1. B	4. B	7. A	10. D	13. E	16. B
2. A	5. D	8. E	11. B	14. D	
3. C	6. C	9. C	12. B	15. C	

1. $(a-2)x+(a+3)y=5,$

$6x+9y=3,$

ÇK(SS) = R ⇒ **a = ?**

A) 1 B) 2 C) 4 D) 6 E) 12

2. $7x+9y+5z=44,$

$x+3y-z=-22,$

⇒ **x + y + z = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

3. $x, y, z \in Z^+,\ x \neq y \neq z,$

$x+y+z=11$

$x+y-z=3 \Rightarrow \sum \mathbf{x} = ?$

A) 14 B) 16 C) 17 D) 21 E) 23

4. $3x+y+3z=17$

$x-y+z=5$

⇒ **x + y + z = ?**

A) 12 B) 11 C) 6 D) 5 E) 4

5. $3a+2b-c=6,$

$a-5b-2c=10,$

$4a+11b+11c=8$

⇒ **a + b + c = ?**

A) 4 B) 3 C) 2 D) –2 E) –3

6. $\frac{1}{x^2-y^2}=\frac{1}{x-y}=\frac{1}{6} \Rightarrow \mathbf{x}=?$

A) 5 B) $\frac{9}{2}$ C) 4 D) $\frac{7}{2}$ E) $\frac{5}{2}$

7. $\left.\begin{aligned} x-\frac{3}{y}&=4 \\ y-\frac{3}{x}&=6 \end{aligned}\right\} \Rightarrow \frac{\mathbf{x}}{\mathbf{y}}=?$

A) 3 B) 2 C) $\frac{3}{2}$ D) $\frac{2}{3}$ E) $\frac{1}{2}$

8. $(m-1)x+(n+3)y+6=0,$

$2x+3y-3=0$

ÇK(SS) = R ⇒ $\frac{\mathbf{m}}{\mathbf{n}}=?$

A) 2 B) 3 C) $\frac{1}{3}$ D) $-\frac{1}{3}$ E) – 3

9. $3x + 2y = 15,$

$-x - 3z = 1,$

$2y + z = 6$

$\Rightarrow$ **$x + y + z = ?$**

A) 4 B) 5 C) 6 D) 8 E) 10

10. $3x - y = 5,$

$x + z = 6,$

$3y - 5z = 7$

$\Rightarrow$ **$2x + y - 2z = ?$**

A) 6 B) 8 C) 9 D) 10 E) 12

11. $x \cdot y = \frac{1}{2}$

$y \cdot z = \frac{1}{3}$

$x \cdot y \cdot z = 2 \Rightarrow$ **$x \cdot z = ?$**

A) 4 B) 6 C) 8 D) 12 E) 24

12. $3a - b + c = 8,$

$a - 2b - c = -6$

$a + 2b + c = 4$

$\Rightarrow$ **$a + b + c = ?$**

A) 6 B) 5 C) 1 D) –5 E) –6

13. $-x - 2y + 3z = -2,$

$-3x + 2y + z = 8$

$\Rightarrow$ **$x - 2y + z = ?$**

A) 5 B) 4 C) –3 D) –4 E) –5

14. $a, b, c \in Z,$

$a + b = 6,$

$a + c = 5,$

$3b + c = 3 \Rightarrow$ **$2a + 3b - c = ?$**

A) 5 B) 7 C) 13 D) 15 E) 17

15.
$$\left.\begin{array}{l} \frac{3a}{2} - \frac{2b}{3} = \frac{1}{6} \\ \frac{2a}{3} - \frac{3b}{2} = -\frac{7}{3} \end{array}\right\} \Rightarrow \mathbf{b \cdot a = ?}$$

A) 4 B) 2 C) 1 D) –1 E) –2

16.
$$\begin{array}{l} \frac{3}{x} + \frac{2}{y} = 2 \\ \frac{1}{x} - \frac{1}{y} = 4 \end{array} \quad \Rightarrow \mathbf{x = ?}$$

A) 2 B) $\frac{3}{2}$ C) 1 D) $\frac{1}{2}$ E) $-\frac{1}{4}$

[KARADENİZ TEKNİK ÜNİVERSİTESİ 2016]

Yanıtlar / Answers

1. E	**4. C**	**7. D**	**10. C**	**13. E**	**16. D**
2. B	**5. B**	**8. C**	**11. E**	**14. C**	
3. A	**6. D**	**9. B**	**12. A**	**15. B**	

1. $\frac{2-x}{4}+\frac{3x-1}{2}=\frac{x+1}{6}+2 \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

2. $\frac{x+1}{x-1}-\frac{1}{2x-2}=1 \Rightarrow$ **ÇK(SS) = ?**

A) {–2} B) {–1} C) {0} D) ∅ E) R

3. $x-y=8 \Rightarrow$

2x + 4(2y – x) – 3[y – (2x – 3y)] = ?

A) 16 B) 24 C) 32 D) 40 E) 48

4. $m \neq 3 \Rightarrow$

$4x-m=mx-3+x \Rightarrow$ **x = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

5. a = 2, b = 5

$$\left.\begin{array}{l} ax+by=3 \\ -by+ax=5 \end{array}\right\} \Rightarrow$$ **ÇK(SS) = ?**

A) $\left\{\left(4,-\frac{1}{2}\right)\right\}$ B) $\left\{\left(2,-\frac{1}{5}\right)\right\}$ C) $\{(4,3)\}$ D) $\{(2,3)\}$ E) $\left\{\left(2,-\frac{1}{2}\right)\right\}$

6. $2a+3=\frac{a-5x}{x+2}$

ÇK(SS) = ∅ ⇒ **a = ?**

A) –4 B) –2 C) 0 D) 2 E) 4

7. $mx-3y+6=0$

$4x+y+n=0$

ÇK(SS) = R ⇒ **m + n = ?**

A) –18 B) –14 C) –12 D) –8 E) –6

8. $\frac{x+1}{x-2}+\frac{x+1}{x+2}+\frac{2x-3}{x+1}=\frac{3-2x}{x-1} \Rightarrow$ **x = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

9. $3mx - 6m = 4 - 9x$

$ÇK(SS) = \varnothing \Rightarrow$ **$m = ?$**

A) -3 B) -2 C) $\frac{2}{3}$ D) $\frac{3}{2}$ E) 3

10. $\left.\begin{array}{l} x \cdot y = \frac{5}{4} \\ x - y = 5 \end{array}\right\} \Rightarrow \frac{\mathbf{x}}{\mathbf{y}} + \frac{\mathbf{y}}{\mathbf{x}} = \mathbf{?}$

A) $\frac{5}{11}$ B) $\frac{38}{11}$ C) 9 D) 19 E) 22

11. $\left.\begin{array}{l} x - y = 6 \\ z - m = 8 \end{array}\right\} \Rightarrow$ **$(x + z) - (y + m) = ?$**

A) 12 B) 14 C) 16 D) 24 E) 36

12. $\left.\begin{array}{l} x^2 = 3y - 16 \\ y^2 = 3x - 16 \end{array}\right\}$

$x - y = 7 \Rightarrow$ **$x \cdot y = ?$**

A) -10 B) -8 C) -6 D) 6 E) 10

13. $x = 24 + z + y$

$3x + y + z = 0 \Rightarrow$ **$x = ?$**

A) 4 B) 6 C) 8 D) 10 E) 12

14. $\dfrac{12}{3 + \dfrac{11}{1 - \dfrac{1}{x}}} = 3 \Rightarrow$ **$x = ?$**

A) $-\frac{1}{2}$ B) $-\frac{1}{4}$ C) $-\frac{1}{6}$ D) $-\frac{1}{8}$ E) $-\frac{1}{10}$

15. $\frac{9 - x^2}{x} + 3 = \frac{x - 3}{2} \Rightarrow \sum \mathbf{x} = \mathbf{?}$

A) 2 B) 3 C) 4 D) 6 E) 9

16. $\dfrac{3}{1 - \dfrac{2}{a - 1}} = 1 \qquad \Rightarrow \mathbf{a = ?}$

A) -2 B) -1 C) 0 D) 1 E) 2

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers					
1. B	**4. B**	**7. B**	**10. E**	**13. B**	**16. C**
2. D	**5. B**	**8. C**	**11. B**	**14. E**	
3. C	**6. A**	**9. A**	**12. A**	**15. B**	

BİRİNCİ DERECEDEN EŞİTSİZLİKLER
FIRST ORDER INEQUALITIES

BÖLÜM
CHAPTER **2**

Alıştırmalar / Exercises

Alıştırma / Exercise 1

$x \in \mathbb{Z}$,

$\frac{x}{3} - 2x + 15 < 5 \Rightarrow$ **min(x) = ?**

Yanıt / The answer is **7**

$x, y, z \in \mathbb{R}$

$x^4y < 0,\ \ y^2z < 0,\ \ x \cdot z^3 > 0$

$\Rightarrow$ **x, y, z = ?, ?, ?**

Yanıt / The answer is **–, –, –**

$\frac{4x-3}{3} + 2 \le 2x - \frac{x+4}{4} - \frac{x}{6}$

$\Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **[8, ∞)**

---

4. $x \in \mathbb{Z}$,

$x + 4 \le 3x - 2 < 13 \Rightarrow$ **$\sum x = ?$**

Yanıt / The answer is **7**

---

5. $x, y \in \mathbb{Z}$

$$\left.\begin{array}{l} -4 < x < 3 \\ -5 < y < 7 \end{array}\right\} \Rightarrow \mathbf{max(3x - 2y) = ?}$$

Yanıt / The answer is **14**

---

6. $x, y \in \mathbb{R}$, $(3y - 2x) \in \mathbb{Z}$,

$-3 < x < 4$, $-2 < y < 3$

$\Rightarrow$ **min(3y – 2x) = ?**

Yanıt / The answer is **–13**

yos lovers

7. $x, y \in Z$

$$\left.\begin{array}{l} -2 \le x < 4 \\ -3 < y \le 2 \end{array}\right\} \Rightarrow \mathbf{min(x^2 - 2y) = ?}$$

Yanıt / The answer is **−4**

8. $(x^2 + y^2) \in Z$,

$-5 < x < 4$,

$-5 < y < -2$

$\Rightarrow$ **$\max(x^2 + y^2) = ?$**

Yanıt / The answer is **49**

9. $x \in Z$,

$$-1 \le \frac{5-3x}{4} < 3 \Rightarrow \mathbf{\sum x = ?}$$

Yanıt / The answer is **3**

10.
$$\left.\begin{array}{l} 2x - 8 < 0 \\ 3x + 9 \ge 0 \end{array}\right\} \Rightarrow \mathbf{ÇK(SS) = ?}$$

Yanıt / The answer is **[−3. 4**

11. $x - 2 \le -3x + 4 < x + 4 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\left(\mathbf{0}, \frac{\mathbf{3}}{\mathbf{2}}\right.$

12. $x, y \in Z$, $a \in Z$,

$$\left.\begin{array}{l} -9 \le x - y < 15 \\ \dfrac{y-x}{a} = 3 \end{array}\right\} \Rightarrow \mathbf{\sum a = ?}$$

Yanıt / The answer is **−4**

13. $4 \leq x^2 \leq 16 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\mathbf{[-4, -2] \cup [2, 4]}$

14. $x^2 > x^3 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\mathbf{(-\infty, 1) - \{0\}}$

15. $x \in Z$,

$-15 < 2(x - 1) < 6 \Rightarrow$ **max(x) + min(x) = ?**

Yanıt / The answer is **–3**

16. $x - 1 \leq -3x + 2 < x + 6 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\mathbf{\left(-1, \frac{3}{4}\right]}$

17. $\left.\begin{array}{r} -1 < x - 1 < 6 \\ 0 < x + 2 \leq 6 \end{array}\right\} \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **(0, 4]**

18. $x > 0$, $x = 3y$,

$2z = 7y \Rightarrow$ **? < ? < ?**

Yanıt / The answer is $\mathbf{y < x < z}$

19. $\dfrac{2}{x-1} \geq \dfrac{1}{2} \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **(1, 5]**

---

20. $x + y - 5 = 0,$

$2 < x < 4 \Rightarrow$ **$? < y < ?$**

Yanıt / The answer is **$1 < y < 3$**

---

21. $(x + y) \in Z,$

$$\left.\begin{array}{r} 3 < x - 1 < 6 \\ -6 < y + 1 < 10 \end{array}\right\} \Rightarrow \mathbf{min(x+y) = ?}$$

Yanıt / The answer is **−2**

---

22. $x, y \in Z,$

$$\left.\begin{array}{r} -3 \leq x < 5 \\ -2 < y < 4 \end{array}\right\} \Rightarrow \mathbf{min(2x-3y) = ?}$$

Yanıt / The answer is **−15**

---

23. $$\left.\begin{array}{r} x^3y^2 < 0 \\ \dfrac{y}{2} > 0 \\ x^2yz < 0 \end{array}\right\} \Rightarrow \mathbf{x, y, z = ?, ?, ?}$$

Yanıt / The answer is **−, + . −**

---

24. $|2x - 1| < 5 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **(−2, 3)**

. $x \in Z$,

$3x - 1 < 11 \Rightarrow \mathbf{max(x) = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

. $x \in Z$,

$\frac{2x-1}{5} > 5 \Rightarrow \mathbf{min(x) = ?}$

A) 13 B) 14 C) 15 D) 16 E) 17

. $x \in N$,

$\frac{3x-2}{2} < 5 \Rightarrow \sum \mathbf{x} = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

. $x, y \in Z$,

$$\left.\begin{array}{r} -4 \le x < 5 \\ 3 < y < 8 \end{array}\right\} \Rightarrow \mathbf{max(x-2y) + min(x+y)} = ?$$

A) –4 B) –2 C) 0 D) 2 E) 4

5. $x \in Z$,

$-1 < y \le 3$

$x - 2y = 4 \Rightarrow \sum \mathbf{x = ?}$

A) 50 B) 51 C) 52 D) 53 E) 54

6. $x, y \in Z$,

$4 \le x \le 12$

$-2 < -y < 6$

$\Rightarrow \mathbf{max(2x + y) = ?}$

A) 21 B) 22 C) 23 D) 24 E) 25

7. $y \in Z$,

$x > x^2$

$3x - 2y = 6 \Rightarrow \mathbf{y = ?}$

A) –3 B) –2 C) –1 D) 0 E) 1

8. $4x - 8 \ge x + 4 \Rightarrow$ **ÇK(SS) = ?**

A) $(-\infty, -4)$ B) $(-\infty, -4]$ C) $(4, \infty)$

D) $[4, \infty)$ E) $[3, \infty)$

9. $x \in Z$,

$$-4 \le \frac{4x+4}{6} \le 8 \Rightarrow \sum x = ?$$

A) 35 B) 36 C) 37 D) 38 E) 39

10. $x \in Z$,

$$7 < 2x + 1 < 17 \Rightarrow \sum x = ?$$

A) 20 B) 21 C) 22 D) 23 E) 24

11. $x \in Z$,

$$\frac{1}{4} < \frac{2x-1}{12} < \frac{2}{3} \Rightarrow \sum x = ?$$

A) 1 B) 3 C) 5 D) 7 E) 9

12. $x \in Z$,

$$\frac{2}{7} < \frac{6}{x+2} < \frac{6}{5} \Rightarrow \max(x) - \min(x) = ?$$

A) 1 B) 3 C) 5 D) 7 E) 9

13. $x, y \in R$, $(2x - y) \in Z$,

$$\left.\begin{array}{l} 3 \le x < 8 \\ -4 < y < 12 \end{array}\right\} \Rightarrow \max(2x - y) = ?$$

A) 20 B) 19 C) 18 D) 17 E) 16

14. $x, y \in R$, $(2y - x) \in Z$,

$-8 \le x \le 10$

$-6 \le y < 12$

$\Rightarrow$ **min(2y − x) = ?**

A) −18 B) −19 C) −20 D) −21 E) −22

15. $x \in Z$,

$3x - 6 < -x + 8 < x + 10$

$\Rightarrow \sum x = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

16. $2x - 1 < x + 5 < 1 - x$

$\Rightarrow$ **ÇK(SS) = ?**

A) $(-\infty, -2)$ B) $(-\infty, 0)$ C) $(2, \infty)$ D) $(-2, \infty)$ E) $(-2, 2)$

Yanıtlar / Answers

1. C	4. A	7. B	10.C	13. B	16. A
2. B	5. C	8. D	11. D	14. E	
3. E	6. E	9. D	12. E	15. C	

1. $\frac{x-1}{2}-2<1+\frac{x}{2} \Rightarrow$ **ÇK(SS) = ?**

A) {–1} B) {1} C) {0} D) ∅ E) R

2. $\frac{x}{3}-2>\frac{x+1}{3} \Rightarrow$ **ÇK(SS) = ?**

A) {–1} B) {–1, 1} C) {2}
D) ∅ E) R

3. $a \in Z,$

$$\left.\begin{array}{l} a-3b=8 \\ -1<b<2 \end{array}\right\} \Rightarrow \mathbf{max(a)=?}$$

A) 11 B) 12 C) 13 D) 14 E) 15

4. $(x^2-2y) \in Z,$

$$\left.\begin{array}{l} -6<x\le 8 \\ -2\le y<4 \end{array}\right\} \Rightarrow \mathbf{max(x^2-2y)=?}$$

A) 63 B) 64 C) 65
D) 67 E) 68

5. $(a^2-b^2) \in Z,$

$$\left.\begin{array}{l} -4\le a\le 6 \\ -5\le b\le 8 \end{array}\right\} \Rightarrow \mathbf{min(a^2-b^2)=?}$$

A) –64 B) –36 C) –32
D) –24 E) 0

6. $(x\cdot y) \in Z,$

$$\left.\begin{array}{l} -10\le x<8 \\ -9<y\le -2 \end{array}\right\} \Rightarrow \mathbf{max(x\cdot y)=?}$$

A) 90 B) 89 C) 88
D) 87 E) 86

7.
$$\left.\begin{array}{l} 2\le a\le 12 \\ -2\le b\le 8 \end{array}\right\} \Rightarrow \mathbf{?<a\cdot b<?}$$

A) $-2<ab<8$ B) $-4<ab<24$
C) $-24<ab<24$ D) $-24\le ab\le 96$
E) $-2<ab<77$

8. $x, y \in R, A \in Z,$
$-3\le x<3\ ,\ -1<y\le 4$
$A=x^2-y \Rightarrow \mathbf{\sum A=?}$

A) 25 B) 28 C) 30 D) 33 E) 35

9. $x \in Z$,

$\frac{4x+7}{6} < \frac{x-1}{3} \Rightarrow$ **max(x) = ?**

A) –5 B) –4 C) –3 D) –2 E) –1

10. $x \in Z$,

$3 < 2 - \frac{2-x}{2} < 5 \Rightarrow \sum x = ?$

A) 11 B) 14 C) 15 D) 18 E) 21

11. $x \in Z$,

$-3x + 4 < 3x - 2 < 2x + 8$

$\Rightarrow \sum x = ?$

A) 11 B) 22 C) 33 D) 44 E) 55

12. $a, b, c \in R$, $A \in Z$,

$4a + 3b - 2c < 4$

$3a + 3b - 3c > 4$

$a + c = A \Rightarrow$ **max(A) = ?**

A) –2 B) –1 C) 0 D) 1 E) 2

13. $x + y = 6$

$-1 < \frac{x}{y} < 4 \Rightarrow ? < y < ?$

A) (1,2, ∞) B) (1, ∞) C) (0, ∞)

D) (–∞, 1,2) **E) (6, ∞)**

14. $a < b < 0 < c$

$\Rightarrow \frac{1}{?} < \frac{1}{?} < \frac{1}{?}$

A) $\frac{1}{a} < \frac{1}{b} < \frac{1}{c}$ B) $\frac{1}{b} < \frac{1}{a} < \frac{1}{c}$

C) $\frac{1}{c} < \frac{1}{a} < \frac{1}{b}$ D) $\frac{1}{a} < \frac{1}{c} < \frac{1}{b}$

E) $\frac{1}{c} < \frac{1}{b} < \frac{1}{a}$

15. $a > a^2$,

$x = \frac{1}{a}$, $y = \frac{1}{a^2}$, $z = \frac{1}{a^3} \Rightarrow ? > ? > ?$

A) x > y > z B) x > z > y

C) y > x > z D) y > z > x

E) z > y > x

16. $a < a^3 < 0$

$x = a^{-1}$, $y = a^{-2}$, $z = a^{-3}$

$\Rightarrow$ **? < ? < ?**

A) x < y < z B) x < z < y

C) z < x < y D) z < y < x

E) y < x < z

Yanıtlar / Answers

1. E	4. E	7. D	10. D	13. A	16. C
2. D	5. A	8. E	11. D	14. B	
3. C	6. B	9. A	12. B	15. E	

$3(x-2)+2 \leq 17 \Rightarrow$ **ÇK(SS) = ?**

A) $(-\infty, -7]$ B) $(-\infty, 7)$ C) $(-\infty, 7]$ D) $[-7, \infty)$ E) $(7, \infty)$

$x \in R^+$,

$4(x-2)+6 < 34$ **ÇK(SS) = ?**

A) $(-\infty, 9)$ B) $(9, \infty)$ C) $[0, 9)$ D) $(0, 9)$ E) $(0, 9]$

$x \in Z$,

$4(x-3) > 3x+5 \Rightarrow$ **min(x) = ?**

A) 17 B) 18 C) 19 D) 20 E) 21

$\frac{2x+1}{3} - \frac{x+2}{4} \geq 4 \Rightarrow$ **ÇK(SS) = ?**

A) $(10, \infty)$ B) $[-10, \infty)$ C) $(-\infty, 10]$ D) $[10, \infty)$ E) $(4, \infty)$

5. $(x+4)^2 \geq 0 \Rightarrow$ **ÇK(SS) = ?**

A) $\varnothing$ B) $[-4, \infty)$ C) $(-4, \infty)$ D) $(4, \infty)$ E) R

6. $(x+2)^2 \leq 0 \Rightarrow$ **ÇK(SS) = ?**

A) R B) $\{-2\}$ C) $(-2, \infty)$ D) $[-2, \infty)$ E) $(-\infty, -2]$

7. $x \in Z$,

$\frac{x}{x-3} > 1 \Rightarrow$ **min(x) = ?**

A) 2 B) 3 C) 4 D) 5 E) 6

8. $x \in Z$,

$3x-5 < x+5 < 2x+3 \Rightarrow$ **$\sum x$ = ?**

A) 4 B) 5 C) 6 D) 7 E) 8

9. $x \in Z$,

$2x + 3 < x + 12 < 3x + 2$

$\Rightarrow$ **max(x) + min(x) = ?**

A) 14 B) 13 C) 12 D) 11 E) 10

10. $\frac{x-3}{3} + \frac{x+2}{6} < \frac{2x+5}{2} \Rightarrow$ **ÇK(SS) = ?**

A) $\left(\frac{-19}{3}, \infty\right)$ B) $\left(\frac{-19}{3}, 0\right)$ C) $\left(-\infty, \frac{-19}{3}\right)$

D) $\left(\frac{19}{3}, \infty\right)$ E) $\left(-\infty, \frac{19}{3}\right)$

11. $x \in Z$,

$2 < \frac{3x+2}{4} < 8 \Rightarrow \sum x = ?$

A) 38 B) 40 C) 42 D) 44 E) 46

12. $a \in Z$,

$$\left.\begin{array}{l} a + b > 5 \\ b + c < 3 \\ a + c > 2 \end{array}\right\} \Rightarrow \textbf{min(a) = ?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

13. $y \in Z$,

$2y = 2x + 3,\ -2 < x < 3 \Rightarrow \sum y = ?$

A) 8 B) 10 C) 11 D) 12 E) 13

14. $x + 3y = 15$,

$3 < y < 6$

$\Rightarrow$ **? < x < ?**

A) $-3 < x < 6$

B) $3 < x < 6$

C) $0 < x < 3$

D) $-3 < x < 3$

E) $-2 < x < 4$

15.
$$\left.\begin{array}{l} -3 < x < 7 \\ -5 < y < 10 \end{array}\right\} \Rightarrow \textbf{? < xy < ?}$$

A) $-15 < x \cdot y < 30$

B) $-30 < x \cdot y < 30$

C) $-30 < x \cdot y < 70$

D) $-35 < x \cdot y < 70$

E) $-35 < x \cdot y < 30$

Yanıtlar / Answers

1. C	4. D	7. C	10. A	13. B
2. D	5. E	8. D	11. C	14. A
3. B	6. B	9. A	12. C	15. D

1. $x \in Z$,

$\frac{3-2x}{5} < -3 \Rightarrow$ **min(x) = ?**

A) 8 B) 9 C) 10 D) 11 E) 12

2. $x \in N$,

$\frac{x}{3} - \frac{x}{2} > -1 \Rightarrow \sum x = ?$

A) 9 B) 10 C) 12 D) 15 E) 21

3. $x, y \in Z$,

$-3 < x < 7$, $-2 < y \leq 6$

$\Rightarrow$ **max(x − 2y) = ?**

A) 7 B) 8 C) 11 D) 12 E) 30

4. $x \in Z$,

$2 \leq y < 4$

$2y - x = 6 \Rightarrow \sum$**x = ?**

A) −2 B) 0 C) 1 D) 2 E) 3

5. $2^x = 18$, $3^y = 64$, $5^z = 117$

$\Rightarrow$ **? < ? < ?**

A) $x < y < z$ B) $x < z < y$

C) $z < y < x$ D) $z < x < y$

E) $y < z < x$

6. $x, y, z \in R^-$,

$x \cdot y = \frac{3}{5}$, $y \cdot z = \frac{13}{15}$, $x \cdot z = \frac{7}{10}$

$\Rightarrow$ **? < ? < ?**

A) $x < y < z$ B) $y < z < x$

C) $z < y < x$ D) $z < x < y$

E) $y < x < z$

7. $y \in Z$,

$x \geq x^2$, $4x - y = 5 \Rightarrow \sum$**y = ?**

A) −15 B) −14 C) −13 D) −12 E) −11

8. $y \in Z$,

$x^2 < x$, $3x - y = 6 \Rightarrow \sum$**y = ?**

A) −10 B) −9 C) −7 D) −6 E) −5

9. $3x - 5 > x + 17 \Rightarrow$ **ÇK(SS) = ?**

A) $(-\infty, 11)$ B) $(-\infty, 11]$ C) $(11, \infty)$

D) $[11, \infty)$ E) $(11, 17)$

10. $-3 \le \dfrac{2x-3}{5} < 7 \Rightarrow$ **ÇK(SS) = ?**

A) $(-6, 19)$ B) $[-6, 19)$ C) $[-6, 19]$

D) $[-3, 7)$ E) $(-3, 5)$

11. $x \in Z$,

$5 < 3 - 2x \le 9 \Rightarrow$ **$\sum x = ?$**

A) -2 B) -5 C) -6 D) -8 E) -10

12. $x, y \in R$,

$-4 < x < 5$, $-2 < y < 6$,

$x - 2y = A \Rightarrow$ **min(A) + max(A) = ?**

A) -6 B) -7 C) -8 D) -9 E) -10

13. $\dfrac{1}{6} < \dfrac{2}{x-3} < \dfrac{1}{3} \Rightarrow$ **ÇK(SS) = ?**

A) $(3, 5)$ B) $(3, 15)$ C) $(6, 5)$

D) $(6, 15)$ E) $(9, 15)$

14. $-\dfrac{1}{2} < \dfrac{3}{x+1} < -\dfrac{1}{8} \Rightarrow$ **ÇK(SS) = ?**

A) $-25 < x < -7$ B) $-23 < x < -6$

C) $-21 < x < -7$ D) $-21 < x < -5$

E) $-25 < x < -9$

15. $x \in Z$,

$-9 \le -2x + 5 < 7 \Rightarrow$ **$\sum x = ?$**

A) 25 B) 26 C) 27 D) 28 E) 29

16. $x \in Z$,

$x - 5 < 2x + 3 \le x + 11 \Rightarrow$ **$\sum x = ?$**

A) -8 B) -2 C) 0 D) 2 E) 8

Yanıtlar / Answers

1. C	**4. A**	**7. A**	**10. B**	**13. E**	**16. E**
2. D	**5. C**	**8. B**	**11. B**	**14. A**	
3. B	**6. C**	**9. C**	**12. B**	**15. D**	

1. $x \in Z^+$,

$2(x-3) < x+4 \Rightarrow$ **max(x) + min(x) = ?**

A) 2 B) 3 C) 5 D) 10 E) 13

2. $x \in Z$,

$\frac{x+1}{4} - \frac{x-2}{2} < \frac{2x-3}{6} \Rightarrow$ **min(x) = ?**

A) 1 B) 3 C) 4 D) 6 E) 8

3. $3x + 1 \le x + 7 < 2x + 6 \Rightarrow$ **ÇK(SS) = ?**

A) (1, 3) B) (0, 4) C) [1, 4]

D) [1, 3] E) (1, 3]

4. $\left.\begin{matrix} (x^2-3) \in Z \\ -3 < x < 4 \end{matrix}\right\} \Rightarrow$ **max(x² – 3) = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

5. $(x^2 + x) \in Z$,

$-5 \le x < 3 \Rightarrow$ **max(x² + x) + min(x² + x) = ?**

A) 21 B) 20 C) 19 D) 16 E) 14

6. $x, y \in Z$,

$\left.\begin{matrix} -3 \le x < 4 \\ -1 \le y < 2 \end{matrix}\right\} \Rightarrow$ **max(3x – 2y) = ?**

A) 9 B) 10 C) 11 D) 12 E) 13

7. $x, y \in R$, $(3x - 2y) \in Z$,

$\left.\begin{matrix} -3 \le x < 4 \\ -1 \le y < 2 \end{matrix}\right\} \Rightarrow$ **max(3x – 2y) = ?**

A) 9 B) 10 C) 11 D) 12 E) 13

8. $x, y \in R$, $(2x + 3y) \in Z$,

$\left.\begin{matrix} 2 < x < 5 \\ -4 < y < 3 \end{matrix}\right\} \Rightarrow$ **min(2x + 3y) = ?**

A) –10 B) –7 C) –4 D) 2 E) 4

9. $x, y \in \mathbb{Z}$,

$$\left.\begin{array}{l} -4 < x \le 3 \\ 0 \le y < 5 \end{array}\right\} \Rightarrow \mathbf{max(2x - y) = ?}$$

A) 6 B) 8 C) 10 D) 12 E) 14

10. $x > 0$,

$$\frac{3x-5}{x} > 2 \quad \Rightarrow \quad \mathbf{ÇK(SS) = ?}$$

A) $(0, 5)$ B) $(5, \infty)$ C) $[5, \infty)$ D) $\mathbb{R}^+$ E) $(0, 5]$

11. $x, y, z \in \mathbb{R}$,

$$\left.\begin{array}{l} x^2y > 0 \\ y^2z < 0 \\ 2x = 3z \end{array}\right\} \Rightarrow \mathbf{? < ? < ?}$$

A) $y < z < x$ B) $y < x < z$ C) $x < z < y$ D) $x < y < z$ E) $z < y < x$

12. $a < 0 < c < b \Rightarrow$ **? < ? < ?**

A) $\frac{1}{a} > \frac{1}{c} > \frac{1}{b}$ B) $\frac{1}{b} > \frac{1}{c} > \frac{1}{a}$

C) $\frac{1}{a} > \frac{1}{b} > \frac{1}{c}$ D) $\frac{1}{c} > \frac{1}{b} > \frac{1}{a}$

E) $\frac{1}{c} > \frac{1}{a} > \frac{1}{b}$

13. $0 < x < y < 1 \Rightarrow$ **? <** $\mathbf{\frac{y}{x}}$ **< ?**

A) $0 < \frac{y}{x} < 1$ B) $1 < \frac{y}{x} < 2$ C) $0 < \frac{y}{x} < 2$

D) $0 < \frac{y}{x} < \infty$ E) $1 < \frac{y}{x} < \infty$

14.

$$\left.\begin{array}{l} 1 \le 2x + 1 \le 5 \\ -2 \le 3x - 5 \le 4 \end{array}\right\} \Rightarrow \mathbf{max(x) = ?}$$

A) 0 B) 1 C) 2 D) 3 E) 4

15. $(x + y), (x - y) \in \mathbb{Z}$,

$-5 < x + y < 3$,

$-4 < x - y < 2$

$\Rightarrow$ **max**$\mathbf{(x^2 - y^2) = ?}$

A) 12 B) 11 C) 10 D) 9 E) 8

16. $x, y \in \mathbb{R}$, $\left(\frac{1}{x} + \frac{1}{y}\right) \in \mathbb{Z}$,

$$\left.\begin{array}{l} 1 < x < 4 \\ -3 < y < 3 \end{array}\right\} \Rightarrow \mathbf{min\left(\frac{1}{x} + \frac{1}{y}\right) = ?}$$

A) −1 B) −2 C) 0 D) 1 E) 2

Yanıtlar / Answers

1. D	**4. C**	**7. E**	**10. B**	**13. E**	**16. C**
2. C	**5. C**	**8. B**	**11. C**	**14. C**	
3. E	**6. C**	**9. A**	**12. D**	**15. A**	

1. $x \in N$,

$3x + 7 < 2x + 1 \Rightarrow$ **ÇK(SS) = ?**

A) $(-\infty, 0)$ B) $(0, \infty)$ C) $[-6, \infty)$

D) $(-\infty, -6)$ E) $\varnothing$

2. $\frac{x}{2} - 3 < \frac{x+1}{2} \Rightarrow$ **ÇK(SS) = ?**

A) $\{0\}$ B) $\{1\}$ C) $\varnothing$

D) R E) $R \setminus \{0\}$

3. $x^2 < x$,

$$\left.\begin{array}{l} a = x^4 \\ b = x^{-2} \\ c = \frac{1}{x^3} \end{array}\right\} \Rightarrow \mathbf{? > ? > ?}$$

A) $a > b > c$ B) $a > c > b$ C) $c > b > a$

D) $b > c > a$ E) $c > a > b$

4. $x^2 - 4x + 5 \in Z$,

$-2 < x \le 4 \Rightarrow$ **max($x^2 - 4x + 5$) = ?**

A) 20 B) 19 C) 18 D) 17 E) 16

5. $(2x - y) \in Z$,

$-3 \le x < 0,\ 0 \le y < 3 \Rightarrow \sum$ **(2x − y) = ?**

A) −35 B) −36 C) −37

D) −38 E) −39

6. $(a^2 - b^2) \in Z$,

$$\left.\begin{array}{l} -1 < a < 1 \\ -2 < b \le 2 \end{array}\right\} \Rightarrow \sum \mathbf{(a^2 - b^2) = ?}$$

A) −11 B) −10 C) −7 D) −5 E) −3

7. $(a \cdot b) \in Z$,

$$\left.\begin{array}{l} -5 \le a < 6 \\ -3 \le b \le 2 \end{array}\right\} \Rightarrow \mathbf{max(a \cdot b) = ?}$$

A) −18 B) −10 C) 12 D) 15 E) 18

8. $b \in N$,

$$\left.\begin{array}{l} a + b < 4 \\ b + c < 3 \\ a + c > 2 \end{array}\right\} \Rightarrow \sum \mathbf{(b) = ?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

9. $a, b, c \in R, x \in Z,$

$3a + 2b - c < 0,$

$-2a - b + c < 0,$

$(a - c) = x \Rightarrow$ **min(x) = ?**

A) −4 B) −3 C) 0 D) 1 E) 4

10. $x \in Z,$

$\frac{5x+3}{4} < \frac{x-1}{2} \Rightarrow$ **max(x) = ?**

A) −4 B) −3 C) −2 D) 1 E) 0

11. $x \in Z,$

$2 < 1 - \frac{x-1}{2} \leq 5 \Rightarrow \sum$ **x = ?**

A) −28 B) −27 C) −24 D) −23 E) −21

12. $x \in Z,$

$-2x < 2x + 4 < 6 + x \Rightarrow \sum$ **x = ?**

A) −4 B) −3 C) 0 D) 1 E) 3

13. $x, y \in R, A \in Z,$

$-4 < x < 2, -2 < y < 3,$

$A = 4x - 3y \Rightarrow$ **max(A) + min(A) = ?**

A) −7 B) −8 C) −11 D) −12 E) −13

14. $x, y \in R, A \in Z,$

$-2 < x < 3, -3 \leq y < 4,$

$A = x^2 - 3y \Rightarrow \sum$ **A = ?**

A) 54 B) 68 C) 77 D) 87 E) 96

15. $-2 < x < 5,$

$-8 < y < 3$

$\Rightarrow$ **? < x·y < ?**

A) $-40 < x \cdot y < 16$ B) $-18 < x \cdot y < 36$

C) $-6 < x \cdot y < 18$ D) $12 < x \cdot y < 18$

E) $12 < x \cdot y < 36$

16. $x, y, z \in R$

$x^2 \cdot y^3 \cdot z^4 > 0$

$x^5 \cdot y^2 \cdot z^6 < 0$

$x \cdot y \cdot z > 0$

Yukarıdaki koşulları sağlayan x, y, z sayılarının işaretleri sırasıyla aşağıdakilerden hangisidir?

What are the signs of, x, y, z number respectively which are satisfying the above conditions?

A) −, +, − B) −, −, − C) +, −, −

D) −, −, + E) +, +, +

(EGE ÜNİVERSİTESİ - YÖS 2016)

Yanıtlar / Answers

1. D	4. E	7. D	10. C	13. C	16. A
2. D	5. B	8. C	11. B	14. D	
3. C	6. B	9. D	12. D	15. A	

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $x < 0 < y$

$\Rightarrow x + y + \sqrt{x^2 - 2xy + y^2} = ?$

Yanıt / The answer is **2y**

2. $a, b \in R^+$, $2 < \frac{a}{b} < 3$

$\Rightarrow |a + |a - 3b|| = ?$

Yanıt / The answer is **3b**

3. $a < 0 < b < c$,

$2b = |a|$

$\Rightarrow \frac{|a-b| - |b-c| - |a|}{|a| - |c|} = ?$

Yanıt / The answer is **1**

4. $\left.\begin{array}{l} |x| > x \\ x^3 y < 0 \end{array}\right\} \Rightarrow \sqrt[3]{(x-y)^3} + |x-y| = ?$

Yanıt / The answer is **0**

5. $a < b < 0$

$\Rightarrow \left|\frac{a-b}{b-a}\right| + \left|\frac{a^2-b^2}{a+b}\right| = ?$

Yanıt / The answer is **−a + b + 1**

6. $\left.\begin{array}{l} a + b < b \\ ab < 0 \end{array}\right\}$ ve (and)

$|a-2| - |3+b| - |a| - |2b| = -10$

$\Rightarrow b = ?$

Yanıt / The answer is **3**

7. $a, b, c \in R^+, \frac{1}{c} < \frac{1}{b} < \frac{1}{a}$

$\Rightarrow \mathbf{|a-c| + |b-a| + |c-b| = ?}$

Yanıt / The answer is **2c − 2a**

---

8. $a > 0$

$a - b > 0$

$a + b < 0$

$b|a| - a|b| - |ab| = -6 \Rightarrow \mathbf{a \cdot b = ?}$

Yanıt / The answer is **−2**

---

9. $\left.\begin{array}{l} a-b<2c \\ |a-b-2c| = 3b-a \end{array}\right\} \Rightarrow \dfrac{\mathbf{2c-b}}{\mathbf{c+b}} = \mathbf{?}$

Yanıt / The answer is $\dfrac{\mathbf{1}}{\mathbf{2}}$

---

10. $\sqrt{y^2+4y+4} + |2x-3y| = 0 \Rightarrow \mathbf{x+y=?}$

Yanıt / The answer is **−5**

---

11. $|3a-b| + \sqrt{9a^2-6a+1} = 0 \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is $\dfrac{\mathbf{4}}{\mathbf{3}}$

---

12. $|a-2b| + |b-3c| + |c-2| = 0$

$\Rightarrow \mathbf{3a + 4b + 2c = ?}$

Yanıt / The answer is **64**

13. $|2x - 1| = 7 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **{–3, 4}**

14. $|x - 2a| = 5 \Rightarrow$ ÇK(SS) = $\{x_1, x_2\}$

$x_1 + x_2 = 24 \Rightarrow$ **a = ?**

Yanıt / The answer is **6**

15. $|x - a| = a - 3 \Rightarrow$ ÇK(SS) = $\{x_1, x_2\}$

$x_1 \cdot x_2 = -21 \Rightarrow$ **a = ?**

Yanıt / The answer is **–2**

16. $|a - b| = 3$,

$|x - a + b| = 7 \Rightarrow$ Σ**x = ?**

Yanıt / The answer is **0**

17. $y < x < 0$,

$|x - y| = 6$

$|x - 2| = 20 \Rightarrow$ **y = ?**

Yanıt / The answer is **–24**

18. $|a - b| = 1$,

$|2x - a + b| = 7 \Rightarrow$ Σ**x = ?**

Yanıt / The answer is **0**

19. $|2x-1|+|4x-2|+|6x-3|=30$

$\Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **{–2, 3}**

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20. $|3x-3|+6=|1-x| \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\varnothing$

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21. $\sqrt{x^2+4x+4}+|2x+4|=6 \Rightarrow \sum x = ?$

Yanıt / The answer is **–4**

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22. $|x^2-1|-4|x-1|=0$

$\Rightarrow \prod x = ?$

Yanıt / The answer is **–15**

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23. $||x-4|-5|=5$

$\Rightarrow \sum x = ?$

Yanıt / The answer is **12**

---

24. $||2x-3|-6|=9 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **{–6, 9}**

1. $x \in N^+$,

$|3x - 12| = -3x + 12 \Rightarrow \sum x = ?$

Yanıt / The answer is **10**

2. $|x - 1| = 3x - 2 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\left\{\frac{3}{4}\right\}$

3. $x + 2|x - 1| = 4$

$\Rightarrow \sum x = ?$

Yanıt / The answer is **0**

4. $|x + 4| = |x - 1| \Rightarrow x = ?$

Yanıt / The answer is $-\frac{3}{2}$

5. $|2x - 3| = |x + 1| \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\left\{\frac{2}{3}, 4\right\}$

6. $|x - 3| + |x - 2| = 9$

$\Rightarrow \sum x = ?$

Yanıt / The answer is **5**

7. $2|x| - |x - 1| = 2$

$\Rightarrow \sum x = ?$

Yanıt / The answer is **−2**

8. $|2x - |x - 1|| = 4$

$\Rightarrow \sum x = ?$

Yanıt / The answer is **2**

9. $x \cdot |x - 1| = 12 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **{4}**

10. $x^2 - 4|x| - 12 = 0 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **{−6, 6}**

11. $x \in Z$

$3 < |2x + 1| < 11 \Rightarrow \sum x = ?$

Yanıt / The answer is **−3**

12. $\dfrac{36}{|x - 2| + |x - 4|} = A \Rightarrow$ **max(A) = ?**

Yanıt / The answer is **18**

13. $3^a = 12 \Rightarrow \mathbf{|a - 2| + |3 - a| = ?}$

Yanıt / The answer is **1**

14. $|x^2 - 4x + 4| < 0 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is $\varnothing$

15. $x \in R^+$,

$A = |x - 2y| + |y - 4z|$,

$\min(A) \Rightarrow \mathbf{? < ? < ?}$

Yanıt / The answer is $\mathbf{z < y < x}$

16. $a < 0 < b$,

$|a| < |b| \Rightarrow \mathbf{|-a - b| - |b + a| = ?}$

Yanıt / The answer is **0**

17. $|x| + |-x| - |2x| = A \Rightarrow \mathbf{\sum A = ?}$

Yanıt / The answer is **0**

18. $|x - 1| < 5 \Rightarrow \mathbf{x^2 \in (?, ?)}$

Yanıt / The answer is $\mathbf{[0, 36)}$

19. $0 < x < \frac{2}{5}$

$\Rightarrow |5x - 2| + |-x - 1| = ?$

Yanıt / The answer is **3 – 4x**

20. $|2 - \sqrt{7}| + |4 - \sqrt{7}| = ?$

Yanıt / The answer is **2**

21. $A = |2x - 3y|$

$\min(A) \Rightarrow \frac{4x + y}{4y} = ?$

Yanıt / The answer is $\frac{7}{4}$

22. $|3x - 4| = 5 \Rightarrow \sum x = ?$

Yanıt / The answer is $\frac{8}{3}$

23. $|a - b| = 7,$

$|b + 2| = 4 \Rightarrow \sum a = ?$

Yanıt / The answer is **–8**

24. $|x^2 - x - 6| + 2 \cdot |x - 3| = 0 \Rightarrow x = ?$

Yanıt / The answer is **3**

Test 1

1. $x < 5$

$\Rightarrow |x - 5| + x = ?$

A) $-2x + 5$ B) -5 C) $2x$ D) $2x + 5$ E) 5

2. $1 < x < 4$

$\Rightarrow |x - 1| + |x - 4| = ?$

A) $-2x + 5$ B) -5 C) 5 D) 3 E) $2x - 5$

3. $a < 0 < b < c$

$\Rightarrow |b - c| + |b - a| - |a - c| = ?$

A) $2b - 2c$ B) $2a - 2b$ C) 0 D) $2c - 2a$ E) $2a + 2b$

4. $x > x^2$

$\Rightarrow |x - 1| + |-x| = ?$

A) -1 B) $-2x$ C) 1 D) $2x - 1$ E) $2x + 1$

5. $2^x = 35$

$\Rightarrow |x - 7| - |8 - x| = ?$

A) -1 B) $-2x - 5$ C) 15 D) $2x - 15$ E) $2x + 1$

6. $x < x^3 < 0$

$$\Rightarrow \left|x - \left|x - \left|\frac{x}{2}\right|\right|\right| = ?$$

A) $-5x$ B) $-\frac{5x}{2}$ C) 0 D) $\frac{5x}{2}$ E) $5x$

7.

$$\left.\begin{aligned} 3^x &= 10 \\ 5^y &= \frac{1}{10} \end{aligned}\right\} \Rightarrow |x - y| - |y + 1| + |x + y| = ?$$

A) $x + y$ B) $x + 2y + 1$ C) $2x + y + 1$ D) 1 E) $x - y - 1$

8. $a < |a|$

$\Rightarrow |-a - |a|| - |a| = ?$

A) $-2a$ B) $-a$ C) a D) $2a$ E) $3a$

9. $|x + y - 8| + |x - y - 2| = 0$

$\Rightarrow$ **$x \cdot y = ?$**

A) 5 B) 7 C) 9 D) 12 E) 15

10. $\sqrt[4]{2x-8} + |-y-2| + (z+5)^2 = 0 \Rightarrow \mathbf{x+y+z=?}$

A) –5 B) –3 C) –1 D) 1 E) 3

11. $0 < x < y < z$

$\mathbf{|x-z| + \sqrt{x^2-2xy+y^2} + |y-z| = ?}$

A) –2x B) –2x – 2y C) –2x – 2z

D) 2z – 2x E) 2y – 2x

12. $a < -3$

$\mathbf{\sqrt{a^2+3a+4+\sqrt{a^2+6a+9}} = ?}$

A) –a – 3 B) –a –1 C) a – 1

D) 1 – a E) 3 – a

13. $x < 0,\ y > 0$

$\Rightarrow \mathbf{\sqrt{x^2-2xy+y^2} + \sqrt[4]{x^4} + \sqrt[4]{y^4} = ?}$

A) 2x – 2y B) 2y – 2x C) 0

D) 2x + 2y E) –2x – 2y

14. $a, b, c \in Z^+$

$\frac{1}{a} < \frac{1}{b} < \frac{1}{c} \Rightarrow \mathbf{|a-b| - |b-c| + |a-c| = ?}$

A) 2a – 2b B) 2a – 2c

C) 2a + 2b – c D) 2c – 2b

E) 2b + 2c – 2a

15. $\mathbf{|\sqrt{48} - 5| - |\sqrt{75} - 6| + |\sqrt{12} - 3| = ?}$

A) $-\sqrt{3} - 2$ B) $-2\sqrt{3} - 4$

C) $\sqrt{3} - 2$ D) $2 - 2\sqrt{3}$

E) $4\sqrt{3} - 4$

16. $x < 0 \Rightarrow$

$\mathbf{\sqrt{x^2-2x+1} - \sqrt{x^2-10x+25} = ?}$

A) –6 B) –4 C) –2x – 4

D) –2x – 6 E) 2x – 5

Yanıtlar / Answers

1. E	4. C	7. C	10.B	13. B	16. B
2. D	5. A	8. C	11. D	14. A	
3. C	6. B	9. E	12. B	15. C	

1. $|2x+4| + |8-y| = A$,

min(A) için(for) $\Rightarrow$ **$x + y = ?$**

A) 2 B) 4 C) 6 D) 8 E) 10

2. $\dfrac{48}{|x-1|+|2x-4|} = A \Rightarrow$ **$\max(A) = ?$**

A) 48 B) 36 C) 24 D) 12 E) 16

3 $||x-6|-4| = 7 \Rightarrow$ **$\sum x = ?$**

A) 5 B) 7 C) 10 D) 12 E) 16

4. $x \in R$,

$|x+1| + |x+2| + |x+3| = A \Rightarrow$ **$\min(A) = ?$**

A) 0 B) 1 C) 2 D) 3 E) 4

5. $|2x-13| = 3x-8 \Rightarrow$ **ÇK(SS) = ?**

A) $\left\{\frac{21}{5}\right\}$ B) $\left\{\frac{21}{5}, 5\right\}$ C) $\left\{-5, \frac{21}{5}\right\}$

D) $\{0\}$ E) $\{-5\}$

6. $|2x-2| + |5x-5| - |6x-6| = 5 \Rightarrow$ **$\sum x = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

7. $\left|\frac{1}{x} - 1\right| = 4 \Rightarrow \sum x = ?$

A) $-\frac{1}{15}$ B) $-\frac{2}{15}$ C) $-\frac{1}{5}$

D) $-\frac{4}{15}$ E) $-\frac{1}{3}$

8. $|2x-1| - |x+4| = 0 \Rightarrow$ **$\sum x = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

9. $|x + 1| + |3x + 3| = 8 \Rightarrow \sum x = ?$

A) –1 B) –2 C) –3 D) –4 E) –5

10. $a^2 + |a| - 6 = 0 \Rightarrow \prod x = ?$

A) 8 B) 4 C) 0 D) –4 E) –8

11. $|x^2 - 2x + 4| + 8 = 0 \Rightarrow$ **ÇK(SS) = ?**

A) {4} B) {–2} C) {0}

D) {1} E) ∅

12. $|x^2 - 1| - 6|x + 1| = 0 \Rightarrow \sum x = ?$

A) –6 B) –4 C) –2 D) 1 E) 2

13. $|x^2 - 6x + 9| - 2|x^2 - 9| = 0 \Rightarrow \sum x = ?$

A) –10 B) –9 C) –8 D) –7 E) –6

14. $|7 - |8 - |x - 1||| = 8 \Rightarrow \sum x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $||x - 2| - 4| = 12 \Rightarrow \sum x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

16. $x \in Z$,

$|2x - |x - 2|| = 8 \Rightarrow \sum x = ?$

A) –2 B) –4 C) –6 D) 4 E) 6

Yanıtlar / Answers

1. C	4. C	7. B	10. D	13. D	16. D
2. A	5. A	8. D	11. E	14. B	
3. D	6. B	9. B	12. D	15. D	

1. $|\sqrt{19} - 4| + |4 - \sqrt{19}| = ?$

A) 8 B) $2\sqrt{19}$ C) $2\sqrt{19} - 4$ D) $2\sqrt{19} - 8$ E) $8 - 2\sqrt{19}$

2. $2 < x < 5 \Rightarrow |x - 5| + |x - 2| = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $a < b < c \Rightarrow |b - a| + |a - c| + |c - b| = ?$

A) 2b B) 2c – 2a C) a – c D) b – 2a E) 2c – b

4. $x < 0 < y \Rightarrow |x - y| + |y - x| + |x \cdot y| = ?$

A) 2x – y

B) 2x – 2y + xy

C) 2y – 2x – xy

D) xy – 2x

E) xy – y – x

5. $a < b < 0 \Rightarrow |b - a| + |a + b| + |a - b| = ?$

A) b – 3a B) b – 2a C) b – a D) a – b E) a – 2b

6. $x < 0 \Rightarrow |x| + |-x| - |-2x| = ?$

A) –2x B) –x C) 0 D) x E) 2x

7. $x < 0 < y \Rightarrow \sqrt{x^2} + \sqrt{(x-y)^2} - \sqrt{y^2} = ?$

A) –2x B) –x C) x D) y E) 2y

8. $-2 < x < 2 \Rightarrow \sqrt{x^2 - 4x + 4} + \sqrt{x^2 + 4x + 4} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

yos lovers

9. $A = |2x - 11| \Rightarrow$ **$\min(A) = ?$**

A) -11 B) -1 C) 0

D) 1 E) 11

10. $A = |x - 3| + |5 - x| \Rightarrow$ **$\min(A) = ?$**

A) -2 B) 0 C) 1

D) 2 E) 5

11. $A = \dfrac{24}{|x-2|+|3x-8|} \Rightarrow$ **$\max(A) = ?$**

A) 4 B) 6 C) 8

D) 36 E) 14

12. $A = |2x - 5|$,

$\min(A)$,

$4x + 3y + 3 = 28 \Rightarrow$ **$y = ?$**

A) 2 B) 3 C) 4

D) 5 E) 6

13. $x < |x| = y$,

$|y - x| + |x| + |y| - |-x| = 9 \Rightarrow$ **$x = ?$**

A) -3 B) -2 C) -1

D) 0 E) 3

14. $|2x + y - 3| + |x - 3y + 2| = 0 \Rightarrow$ **$x + y = ?$**

A) -2 B) 0 C) 1

D) 2 E) 4

15. $|x - 5| + |2y - 8| + |3z - 6| = 0 \Rightarrow$ **$x - y + z = ?$**

A) 1 B) 2 C) 3

D) 4 E) 5

16. $|x - 3| = 3 - x \Rightarrow$ **$? < x < ?$**

A) $-\infty < x < 3$

B) $-\infty < x \leq 3$

C) $-3 < x < 3$

D) $-3 \leq x \leq 3$

E) $0 < x \leq 3$

Yanıtlar / Answers

1. D	**4. C**	**7. A**	**10. D**	**13. A**	**16. B**
2. C	**5. A**	**8. D**	**11. D**	**14. D**	
3. B	**6. C**	**9. C**	**12. D**	**15. C**	

1. $x = 3 \Rightarrow$ **$|x - 5| - |x - 4| + |x + 2| = ?$**

A) 4 B) 5 C) 6 D) 7 E) 8

2. $a < 0 < b < c \Rightarrow$

$|a - c| + |c - a| - |b - c| + |-a| - |b + c| = ?$

A) $-3a$ B) $-2a$ C) $-a$ D) $b - a$ E) $c - a$

3. $3 < x < 5 \Rightarrow$ **$|3 - x| - |x - 6| = ?$**

A) -9 B) -3 C) 3 D) 9 E) $2x - 9$

4. $-4 < x < 3 \Rightarrow$ **$|x + 5| + |x - 7| = ?$**

A) $2x - 2$ B) $2x + 12$ C) -2 D) 2 E) 12

5. $x + 3 = 0 \Rightarrow$ **$|x - |x - |2x||| = ?$**

A) 0 B) 3 C) 6 D) 9 E) 12

6. $2 < x < 5,\ -10 < y < -5 \Rightarrow$

$$\frac{|5 - x| + |y + 5|}{x + y} = ?$$

A) -2 B) -1 C) 1 D) 2 E) $\frac{x + y + 10}{x + y}$

7. $5 < x < 9 \Rightarrow$ **$|x - 10| + |5 - x| = ?$**

A) $2x - 5$ B) $2x + 5$ C) -5 D) 5 E) 10

8. $x \in R$,

$|x - 4| + |2x - 8| = 18 \Rightarrow$ **$\sum x = ?$**

A) -12 B) -8 C) 8 D) 10 E) 12

9. $|x - 5y + 8| = -|3y - 6| \Rightarrow \mathbf{x + y = ?}$

A) 2 B) 4 C) 6 D) 8 E) 10

10. $x < y < z,\ z \cdot x > y \cdot z \Rightarrow$

$$\mathbf{|x - z| - \sqrt{x^2 + 2xy + y^2} - (x + y) + |z| = ?}$$

A) $-x$ B) y C) $x + y$

D) $x - z$ E) $z - x$

11. $x \in Z,$

$$\left|\frac{4x-3}{3}\right| \le 3 \Rightarrow \sum x = ?$$

A) 1 B) 2 C) 3 D) 4 E) 5

12. $|x| < 3,\ y = \frac{4x}{3} - 1 \Rightarrow \mathbf{? < y < ?}$

A) $-5 < y < 5$ B) $-4 < y < 4$

C) $-5 < y < 3$ D) $-4 < y < 5$

E) $-3 < y < 5$

13. $x, y, m \in Z,$

$|m - 2x| + |x - y + 7| + |y - 3| = 0 \Rightarrow \mathbf{m = ?}$

A) -8 B) -6 C) -4 D) 4 E) 6

14. $x \in Z,$

$||x - 4| - 5| = 6 \Rightarrow \mathbf{\sum x = ?}$

A) 12 B) 10 C) 8 D) 6 E) 4

15. $a < |a| \Rightarrow \mathbf{|a + |2a|| - |-2a| = ?}$

A) $-3a$ B) $-2a$ C) $-a$ D) a E) $2a$

16. $x < y < z < 0 \Rightarrow$

$\mathbf{|y - x| + |y - z| + |x + y + z| - |2x| = ?}$

A) $-x$ B) $-y$ C) x D) y E) $x + y$

Yanıtlar / Answers

1. C	4. E	7. D	10. A	13. A	16. B
2. A	5. E	8. C	11. E	14. C	
3. E	6. B	9. B	12. C	15. D	

1. $x < 0 < y \Rightarrow \dfrac{|x|}{x} - \dfrac{|y|}{y} = ?$

A) −2 B) −1 C) 0 D) 1 E) 2

2. $a < 5 \Rightarrow |a + |a - 5|| = ?$

A) a − 5 B) 5 − a C) a D) 5 E) 7

3. $a < 0 ,\ b > 0 ,\ c < 0$

$\Rightarrow |b - a| + \sqrt[4]{a^4} + \sqrt[3]{8c^3} - |c - b| + |2 - 3c| = ?$

A) b − a B) 2 − 2a C) 4c − a D) 2a E) a

4. $A = |2x - y|,\ \min(A) \Rightarrow \dfrac{y + x}{y - x} = ?$

A) −2 B) −1 C) 1 D) 2 E) 3

5. $a < 0 < b \Rightarrow \dfrac{|a - 2b|}{|-2b| + |-a|} = ?$

A) −a B) a C) −1 D) 1 E) 2

6. $|x + 3| = 5 \Rightarrow \sum x = ?$

A) −10 B) −8 C) −6 D) −4 E) −2

7. $|2x + 4| = 6 \Rightarrow \sum x = ?$

A) −4 B) −1 C) 2 D) 4 E) 6

8. $|3x - 8| = 4 \Rightarrow$ **ÇK(SS) = ?**

A) $\{4\}$ B) $\left\{\dfrac{4}{3}\right\}$ C) $\{-4\}$ D) $\{4 , -4\}$ E) $\left\{\dfrac{4}{3}, 4\right\}$

9. $|3x-2|+3=4 \Rightarrow$ **ÇK(SS) = ?**

A) $\varnothing$ B) $\{1\}$ C) $\left\{\frac{1}{3}\right\}$

D) $\left\{\frac{1}{3},1\right\}$ E) $\{1,3\}$

10. $2|x-1|+4=8 \Rightarrow$ **ÇK(SS) = ?**

A) $\{-3,-1\}$ B) $\{-1,3\}$ C) $\{-1\}$

D) $\{1\}$ E) $\{3\}$

11. $|x^2-2|=7 \Rightarrow$ **ÇK(SS) = ?**

A) $\{-3\}$ B) $\{3\}$ C) $\{-3,3\}$

D) $\{-5,9\}$ E) $\{9\}$

12. $||x-1|+1|=3 \Rightarrow$ **ÇK(SS) = ?**

A) $\{-1,3\}$ B) $\{-4,4\}$ C) $\{-1,4\}$

D) $\{-4,-1,3\}$ E) $\{-4,-1,3,4\}$

13. $2|x-3|+|3-x|=12 \Rightarrow$ **ÇK(SS) = ?**

A) $\{-1,7\}$ B) $\{-7,1\}$ C) $\{-1\}$

D) $\{-7\}$ E) $\{7\}$

14. $|x-2|+|6-3x|=8 \Rightarrow$ $\sum$**x = ?**

A) 1 B) 2 C) 3

D) 4 E) 5

15. $||x-3|+4|=7 \Rightarrow$ $\sum$**x = ?**

A) 6 B) 4 C) 2

D) −1 E) −3

16. $|x^2-25|=4\cdot|x-5| \Rightarrow$ $\sum$**x = ?**

A) −10 B) −7 C) −5

D) 5 E) 10

Yanıtlar / Answers

1. A	**4. E**	**7. A**	**10. B**	**13. A**	**16. C**
2. D	**5. D**	**8. E**	**11. C**	**14. D**	
3. B	**6. C**	**9. D**	**12. A**	**15. A**	

$\sqrt{x^2} = -x,\ \frac{x}{z} < 0,\ y > -y$

$\Rightarrow \frac{|z-x|-|y+z|}{|-x|-|y|} = ?$

A) $x + y$ B) $x - y$ C) $\frac{x}{y}$
D) -1 E) 1

2. $x \in Z$,
$|3x - 15| + |10 - 2x| \geq 25 \Rightarrow \sum x = ?$
A) -55 B) -45 C) 0 D) 45 E) 55

3. $3 < x < 4 < y < 5 \Rightarrow$
$|5x + 4y - 30| + |4x + 5y - 42| + |x - y| = ?$
A) $10x + 8y - 72$ B) $10x - 12$
C) $8y - 12$ D) -12
E) 12

4. $x < 0 \Rightarrow$

$\sqrt{4x^2} + \sqrt[3]{-27x^3} + \sqrt[4]{(-x)^4} = ?$
A) $-6x$ B) $-4x$ C) $-2x$
D) $2x$ E) $6x$

5. $|3x - y - 9| + |2x + 3y - 17| = 0 \Rightarrow x^2 + y^2 = ?$
A) 16 B) 18 C) 20 D) 25 E) 36

6. $4 < a < 8 \Rightarrow \frac{|a-4|-|a+6|}{|a+3|-|a-2|} = ?$
A) $a - 2$ B) $a + 2$ C) -2
D) 0 E) 2

7. $x \in Z$,
$3 < |4 - x| < 6 \Rightarrow \sum x = ?$
A) 18 B) 16 C) 14 D) 9 E) 8

8. $3^x = 108 \Rightarrow |2x - 10| + 3|x - 1| + x = ?$
A) $2x + 7$ B) $2x + 5$ C) $2x + 3$
D) $2x - 1$ E) $2x - 3$

9. $x \in R$,

$|x + 2| + |x - 4| + |x - 6| = A \Rightarrow$ **$\min(A) = ?$**

A) 4 B) 6 C) 8 D) 10 E) 14

10. $x \in Z$,

$|2x - 3| > 5 \Rightarrow$ **$\sum x = ?$**

A) –9 B) –7 C) –3 D) 7 E) 9

11. $|3x - 6| + |x^2 - 4| = 0 \Rightarrow$ **$|x - 4| + |4 - x| = ?$**

A) 2 B) 4 C) 6 D) 8 E) 12

12. $x, y \in Z$,

$|2x + 3| < 7$, $|y - 2| < 5$

$3x + 2y = A \Rightarrow$ **$\max(A) = ?$**

A) 6 B) 9 C) 12 D) 15 E) 18

13. $x, y \in R$, $y = x + 3$,

$m|x - y| + 3|y - x| = 15 \Rightarrow$ **$m = ?$**

A) –2 B) –1 C) $-\frac{1}{2}$ D) 1 E) 2

14. $|6 - |5 - |x - 3||| = 9 \Rightarrow$ **$\sum x = ?$**

A) 6 B) 8 C) 12 D) 17 E) 23

15. $3x - y = 34$, $|x - 6y| = A$,

$\min(A) \Rightarrow$ **$x = ?$**

A) 8 B) 12 C) 14 D) 16 E) 18

16. $7 + |3x| - 4x = 0 \Rightarrow$ **$\sum x = ?$**

A) 1 B) 3 C) 5 D) 7 E) 8

Yanıtlar / Answers

1. E	**4. A**	**7. B**	**10. A**	**13. E**	**16. D**
2. B	**5. D**	**8. A**	**11. B**	**14. A**	
3. E	**6. C**	**9. C**	**12. D**	**15. B**	

. $|2x-3| = 1 \Rightarrow$ **ÇK(SS) = ?**

A) $\{1\}$ B) $\{2\}$ C) $\{1, 2\}$ D) $\{-1\}$ E) $\{-2, -1\}$

2. $|4x-1| + 6 = 9 \Rightarrow \sum x = ?$

A) -1 B) $-\frac{1}{2}$ C) 0 D) $\frac{1}{2}$ E) 1

3. $|2x+1| = 2x-5 \Rightarrow$ **ÇK(SS) = ?**

A) $\{1\}$ B) $\left\{\frac{1}{7}\right\}$ C) $\left\{\frac{1}{7}, 1\right\}$ D) $\{-1\}$ E) $\varnothing$

4. $|2x-1| = x+2 \Rightarrow$ **ÇK(SS) = ?**

A) $\left\{-3, -\frac{1}{3}\right\}$ B) $\left\{-\frac{1}{3}\right\}$ C) $\{3\}$ D) $\left\{-3, \frac{1}{3}\right\}$ E) $\left\{-\frac{1}{3}, 3\right\}$

5. $|x+2| - 3x + 2 = 0 \Rightarrow$ **ÇK(SS) = ?**

A) $\varnothing$ B) $\{2\}$ C) $\{0\}$ D) $\{-2, 0\}$ E) $\{0, 2\}$

6. $\left.\begin{array}{l} |a| + 5 = b \\ |a| + |b-5| = 4 \end{array}\right\} \Rightarrow b = ?$

A) 8 B) 7 C) 6 D) 3 E) 2

7. $|2x-3| = |x+3| \Rightarrow$ **ÇK(SS) = ?**

A) $\{0\}$ B) $\{-3\}$ C) $\{6\}$ D) $\{0, 6\}$ E) $\{-6, 0\}$

8. $x \in Z$,

$|3-2x| < 7 \Rightarrow \sum x = ?$

A) 12 B) 9 C) 7 D) 4 E) 2

9. $\left|\frac{x+1}{3}\right| < 1 \Rightarrow$ **ÇK(SS) = ?**

A) (−4, 2) B) [−4, 2) C) (0, 2)
D) (−4, 0) E) (−4, 2]

10. $x, y \in Z$,

$$\left.\begin{array}{l} |3x-7| < 5 \\ |2y+5| \le 3 \end{array}\right\} \Rightarrow \mathbf{min(x-2y) = ?}$$

A) −1 B) 0 C) 1
D) 2 E) 3

11. $x \in Z$,

$1 \le |2x+3| \le 5 \Rightarrow \sum x = ?$

A) −9 B) −8 C) −6
D) −4 E) −2

12. $||x+2|+1| < 5 \Rightarrow$ **ÇK(SS) = ?**

A) (−6, 2)
B) (−6, −2) ∪ (−2, 2)
C) (−2, 2)
D) (−6, −2)
E) (−2, 6)

13. $|x^2-16| + 3\cdot|x+4| = 0 \Rightarrow \sum x = ?$

A) −5 B) −4 C) −1
D) 2 E) 4

14. $|x-2| \le |x+4| \Rightarrow$ **ÇK(SS) = ?**

A) (−1, ∞) B) (−1, 1) C) [−1, ∞)
D) [−1, 1) E) (−∞, −1]

15. $|x-3|^{x^2-9} = 1 \Rightarrow \sum x = ?$

A) 1 B) 3 C) 5
D) 6 E) 9

16. $a < 0 < b$

$$\frac{a\cdot|b-a|}{||a|+b|} = ?$$

A) −a B) a C) b D) −b E) 1

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. C	4. E	7. D	10. E	13. B	16. B
2. D	5. B	8. B	11. A	14. C	
3. E	6. B	9. A	12. A	15. B	

$\dfrac{72}{|x+3|+|2x-6|} = A \Rightarrow$ **max(A) = ?**

A) 12 B) 18 C) 24 D) 25 E) 36

$||x-1|-4| = 6 \Rightarrow$ **$\sum x$ = ?**

A) 0 B) 2 C) 4 D) 6 E) 19

$x, y \in R^+$, $1 < y < x$,

$|y-1| + |y-x| = 7 \Rightarrow$ **x = ?**

A) 4 B) 5 C) 6 D) 7 E) 8

$y \in Z$, $|x-1| < 5$,

$x - y + 3 = 0 \Rightarrow$ **$\sum y$ = ?**

A) 21 B) 28 C) 33 D) 35 E) 36

5. $|2x-4| + |x+2| = 8 \Rightarrow$ **$\sum x$ = ?**

A) -4 B) $-\dfrac{4}{3}$ C) $\dfrac{4}{3}$

D) $\dfrac{10}{3}$ E) $\dfrac{14}{3}$

6. $|3x-2| \leq 1$,

$3 < |x+4| \Rightarrow$ **ÇK(SS) = ?**

A) $\left(\dfrac{1}{3}, 1\right]$ B) $\left[\dfrac{1}{3}, 1\right]$ C) $(-1, 1]$

D) $(-2, 2)$ E) $(0, 1]$

7. $|x-3| - 3x = 12 \Rightarrow$ **$\sum x$ = ?**

A) $-\dfrac{39}{4}$ B) $-\dfrac{15}{2}$ C) $-\dfrac{15}{4}$

D) $-\dfrac{9}{4}$ E) $-\dfrac{1}{4}$

8. $\left|\dfrac{2}{x} - 1\right| = 3 \Rightarrow \sum x = ?$

A) -1 B) $-\dfrac{1}{2}$ C) 0 D) $\dfrac{1}{2}$ E) 1

9. $|x-4| + |x+2| = 7 \Rightarrow \sum x = ?$

A) –2 B) –1 C) 0 D) 1 E) 2

10. $x \in Z$,

$-1 \le |x-3| < 5 \Rightarrow \sum x = ?$

A) 9 B) 12 C) 27 D) 32 E) 36

11. $\dfrac{6}{|x-2|+|2x-1|} = A \Rightarrow \max(A) = ?$

A) 0 B) 1 C) 2 D) 3 E) 4

12. $|x+1| \le 5$,

$2x + 3y = 0 \Rightarrow ? \le y \le ?$

A) $\left[-\frac{8}{3}, 6\right]$ B) $\left[-\frac{8}{3}, 4\right]$ C) $\left[\frac{8}{3}, 6\right]$

D) $\left[\frac{8}{3}, 7\right]$ E) $\left[-6, \frac{8}{3}\right]$

13. $|x-1| + |x+5| = 5 \Rightarrow$ **ÇK(SS) = ?**

A) $\left\{-\frac{9}{2}\right\}$ B) $\left\{-\frac{9}{2}, \frac{1}{2}\right\}$ C) $\left\{\frac{1}{2}\right\}$

D) R E) ∅

14. $||2+x|+3| \le 6 \Rightarrow$ **ÇK(SS) = ?**

A) (–5, 1) B) (–5, –1] C) [–5, –1]

D) [–5, 1] E) [–5, 5]

15. $x = |y+1| + 3$

$|y+1| + |2x-6| = 12 \Rightarrow$ **x = ?**

A) 4 B) 6 C) 7 D) 8 E) 9

16. $x + 3|x-1| + 2 = 0$

denkleminin çözüm kümesi aşağıdakilerden hangisidir?

Which one of the following is the solution set of the equatior $x + 3|x-1| + 2 = 0$?

A) $\left(-\frac{1}{4}, -\frac{5}{2}\right)$ B$\left(\frac{1}{4}\right)$ C) $\left(\frac{5}{2}\right)$

D) $\left(-\frac{1}{4}, -\frac{5}{2}\right)$ E) ∅

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016

Yanıtlar / Answers

1. A	**4. E**	**7. D**	**10. C**	**13. E**	**16. E**
2. B	**5. C**	**8. B**	**11. E**	**14. D**	
3. E	**6. B**	**9. E**	**12. B**	**15. C**	

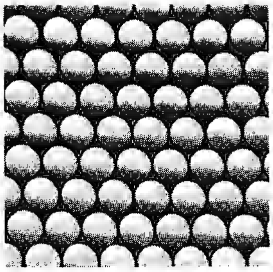
ÜNİTE 5

UNIT

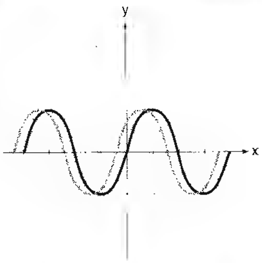
Leonhard Euler [1707 – 1783]

Leonhard Euler, matematik, fizik, analitik geometri, trigonometri ve sayı teorisi konusunda katkıları bulunan bir İsviçre matematikçisidir.

Leonhard Euler was a Swiss mathematician who made enormous contibutions to a wide range of mathematics and physics including analytic geometry, trigonometry, geometry, calculus and number theory



✓ **KONU ÖZETLERİ** .... 331 – 342
✓ **SAYMA İLKELERİ(PERMÜTASYON-KOMBİNASYON) ve OLASILIK** .... 343 – 354
✓ **KÜMELER** .... 355 – 380
✓ **FONKSİYONLAR** .... 381 – 418
✓ **İŞLEM ve MODULAR ARİTMETİK** .... 419 – 438
✓ **SAYISAL YETENEK** .... 439 – 446



✓ SUMMARY .... 331 – 342
✓ COUNTING PRINCIPLES (PERMUTATIONS, COMBINATIONS) & PROBABILITY .. 343 – 354
✓ SETS .... 355 – 380
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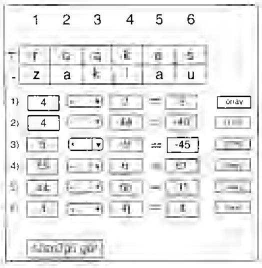
✓ MATHEMATICAL SKILL .... 439 – 446



BU SAYFADA KONU MATERYALİ YOKTUR.

NO SUBJECT MATERIAL ON THIS PAGE.

SAYMA ve SAYMANIN İLKELERİ / COUNTING and COUNTING PRINCIPLES

Tanım: Sayma, nesnelerin ve olayların sayılarla birebir eşlenmesidir. Saymanın temel ilkeleri, **toplama** ve **çarpmadır.**

Definition: Counting is matching the objects and the events with the numbers. The fundamental principles of counting are the principle of **addition** and the principle of **multiplication**.

PERMÜTASYON / PERMUTATIONS

Tanım: n farklı elemanın bir elemanı birinci, diğeri ikinci bir diğeri de üçüncü olacak şekilde sıralanarak devam etmesine **permütasyon** denir.

Definition: A permutation of n different elements is an ordering of the elements such that one element is first, one is second, one is third and so on.

$$P(n, r) = \frac{n!}{(n-r)!}$$

KOMBİNASYON / COMBINATIONS

Tanım: n tane farklı nesne verilmiş ise, bu nesnelerden herhangi r ≤ n (r pozitif bir tamsayı) tanesi seçilip alınır ve bu r nesne herhangi bir sırada yazılırsa, buna **r ninci mertebeden kombinasyon** denir.

Definition: The number of combinations of a set of n different objects taken r at a time r ≤ n, r and n are non negative integers.

$$C(n, r) = \binom{n}{r} = \frac{n!}{r! \cdot (n-r)!} = \frac{P(n, r)}{r!}$$

ÖZELLİKLER / PROPERTIES

1. $C(n, 0) = \binom{n}{0} = 1$
2. $C(n, 1) = \binom{n}{1} = \binom{n}{n-1} = n$
3. $C(n, 0) + C(n, 1) + C(n, 2) + \ldots + C(n, n) = 2^n$
4. $C(n, r) = C(n, k) \Rightarrow$ **i.** $n = r + k$ **ii.** $r = k$

NOT

Bir olayın olma olasılığı 0 dan küçük, 1 den büyük olamaz.

The probability of an event can not be less than 0 and greater than 1.

i. $P(A) + P(A') = 1$

ii. *Kesin olay için* $\mathbf{P(E) = 1}$

For a certain event; $\mathbf{P(E) = 1}$

İmkansız olay için $\mathbf{P(\emptyset) = 0}$ *dır.*

For impossible event; $\mathbf{P(\emptyset) = 0}$

iii. *A, B ∈ S için* $A \cap B = \emptyset$ *(A ve B ayrık olaylar) ise* $\mathbf{P(A \cup B) = P(A) + P(B)}$ *dir.*

For A, B ∈ S, if $A \cap B = \emptyset$ *(A an B are independent events) then*

OLASILIK / PROBABILITY

Tanım: Olabilecek sonuçların belli fakat hangisinin olacağı kesin olmayan olayların matematiksel sayılarla ifade edilmesine **olasılık** denir.

Definition: The numeric expression of the results that might happen but not certain whicl one will happen is called probability.

OLASILIK FONKSİYONU / THE PROBABILITY FUNCTION

Tanım: E örnek uzayının tüm alt kümelerinin oluşturduğu kümeye S denirse, P: S → [0, 1] şeklinde tanımlanan fonksiyona **olasılık fonksiyonu** denir ve A ∈ S olmak üzere, P(A) sayısına da **A olayının olasılığı** denir.

Definition: If S is a set that consists of all the subsets of E, the function P that defined fror S to (0, 1) is called the probability function. If A ∈ S, P(A) is the probability of A.

OLASILIK FONKSİYONUNUN ÖZELLİKLERİ
PROPERTIES OF THE PROBABILITY FUNCTION

1. $P(A \cup B) = P(A) + P(B) - P(A \cap B), (A \cap B \neq \emptyset)$
2. $P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) - P(B \cap C) + P(P(A \cap B \cap C)$
3. A olayının tümleyeni A′ olmak üzere, $P(A) = 1 - P(A')$ dır.
   If the complement of A is A′, then $P(A) = 1 - P(A')$.
4. $A \subset B$ ise $P(A) \leq P(B)$ dir.
   If $A \subset B$*, then* $P(A) \leq P(B)$.

BAĞIMSIZ OLAYLAR / INDEPENDENT EVENTS

Tanım: A ve B, E örnek uzayının iki olayı olmak üzere bu iki olaydan birinin olması diğerin olmasını etkilemiyorsa A ve B olaylarına **bağımsız olaylar** denir.

Definition: Two events are called as independent events if the occurance of one has effect on the occurrance of the other.

$$P(A) \neq 0,\ P(B) \neq 0 \Rightarrow P(A \cap B) = P(A) \cdot P(B)$$

$$P(A) \neq 0,\ P(B) \neq 0 \Rightarrow P(A \cap B) = P(A) \cdot P(B)$$

KÜMELER / SETS

Tanım: Nesnelerin iyi tanımlanmış bir listesidir. Kümeyi oluşturan nesnelere kümenin **elemanları** denir.

Definition: A set is a well defined list of objects. The objects that constitute the set are called the **elements** of the set.

Bir A kümesinin eleman sayısı n(A) biçiminde gösterilir.

The number of elements of a set A is shown by n(A).

ALT KÜME / SUBSET

- Bir A kümesinin her elemanı, bir B kümesinin de elemanı ise A'ya B'nin **alt kümesi** denir. $A \subset B$ biçiminde gösterilir.

If all elements of the set A are also included in the set B, then we say that A is a **subset** of the set B. It is shown by $A \subset B$.

Alt Kümenin Özellikleri
Properties of a Subset

1. $A \subset A$
2. $\emptyset \subset A$
3. $A \subset B$ ve (and) $B \subset C \Rightarrow A \subset C$
4. $A \subset B$ ve (and) $B \subset A \Rightarrow A = B$
5. n elemanlı bir kümenin alt kümelerinin sayısı 2^n dir.
   The number of subsets of a set with n elements is equal to 2^n.

TÜMLEME / COMPLEMENTARY SET

Üzerinde işlem yapılan tüm kümeleri kapsayan kümeye "**evrensel küme**" denir. Evrensel küme **E** veya **U** ile gösterilir.

$A \in E$ olsun. E kümesinin A kümesinde olmayan elemanlarının oluşturduğu kümeye "**A kümesinin tümleyeni**" denir. A kümesinin tümleyeni A′ ile gösterilir.

A set comprising all sets, on which operations are done, is called the universal set and shown by E or U. Let $A \in E$, the elements that exist in U, but do not exist in A are the elements of the complementary set of A. The complementary set of A is shown by A′.

Tümleyenin Özellikleri
Properties of Complementary Sets

1. $E' = \emptyset$
2. $\emptyset' = E$
3. $(A')' = A$
4. $A \subset B \Leftrightarrow B' \subset A'$

BİRLEŞİM ve KESİŞİM İŞLEMLERİ
UNION and INTERSECTION OPERATIONS

Birleşim: A ve B kümleri için, ortak elemanları bir kez kullanmak üzere A nın ve B nin elemanlarından oluşturduğumuz yeni kümeye A ile B nin "**birleşim kümesi**" denir.
$A \cup B$ ile gösterilir.

Union: The new set composed of all elements of the sets A and B, but by taking the commor elements once is called the union set of A and B. It is shown by $A \cup B$.

$$A \cup B = \{x \mid x \in A \text{ veya (or) } x \in B\}$$

Kesişim: A ve B kümeleri için bu iki kümenin ortak olan elemanlarının oluşturduğu kümeye A ile B nin "**kesişim kümesi**" denir. $A \cap B$ ile gösterilir.

Intersection: The intersection set of A and B is a set composed of common elements of A and B. It is shown by $A \cap B$.

$$A \cap B = \{x \mid x \in A \text{ ve (and) } x \in B\}$$

Birleşim ve Kesişimin Özellikleri
Properties of Union & Intersection

1. $A \cup B = B \cup A$
   $A \cap B = B \cap A$
2. $A \cup (B \cup C) = (A \cup B) \cup C$
   $A \cap (B \cap C) = (A \cap B) \cap C$
3. $A \cup A = A$ ve (and) $A \cap A = A$
4. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
   $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
5. $(A \cup B)' = A' \cap B'$ ve (and) $(A \cap B)' = A' \cup B'$
6. $A \cup \emptyset = A$ ve (and) $A \cap \emptyset = \emptyset$
7. $A \cup E = E$ ve (and) $A \cap E = A$
8. $A \cup A' = E$ ve (and) $A \cap A' = \emptyset$
9. $n(A \cup B) = n(A) + n(B) - n(A \cap B)$
10. $n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(A \cap C) - n(B \cap C) + n(A \cap B \cap C)$

FARK İŞLEMİ / SET SUBTRACTION

A ve B kümeleri için A'nın elemanı olup B'nin elemanı olmayan elemanların oluşturduğu kümeye "**A fark B**" denir. A–B ya da A\B biçiminde gösterilir.

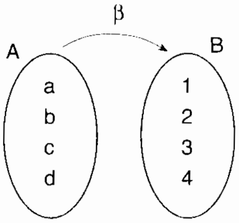
For the sets A and B, a set composed of elements that exist in A but, do not exist in B is called A minus B. It is shown by A–B or A \ B.

$$A - B = A \setminus B = \{x \mid x \in A \text{ ve (and) } x \notin B\}$$

Fark İşleminin Özellikleri
Properties of Set Subtraction

1. $A - B = A \cap B'$
2. $A \subset B \Rightarrow A - B = \emptyset$
3. $A - B = A - (A \cap B)$
4. $E - A = A'$
5. $A - \emptyset = A$
6. $(A - B)' = (A \cap B')' = A' \cup B$
7. $(A - B) \cup B = A \cup B$

FONKSİYONLAR / FUNCTIONS



Tanım: A' dan B' ye bir β bağıntısı A' nın her elemanını B' de bir ve yalnız bir elemanla eşliyorsa, β, A' dan B' ye bir fonksiyondur denir. A kümesine **tanım kümesi**, B kümesine **değer kümesi** denir.

Definition: If a relation β from the set A to set B makes an assignment to each number in the set A and assigns one number of A to only one number in the set B then β is called a function. Set A is called the domain and set B is called the range of the function.

BİRİM FONKSİYON / UNIT FUNCTION

$f(x) = x \Rightarrow$ f birim fonksiyondur. $I(x) = x$ ile gösterilir.

$f(x) = x \Rightarrow$ f is the unit function. It is denoted by $I(x) = x$

SABİT FONKSİYON / CONSTANT FUNCTION

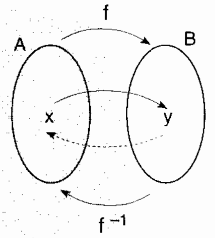
$f(x) = c,\ c \in R \Rightarrow$ f sabit fonksiyondur.

$f(x) = c,\ c \in R \Rightarrow$ f is a constant function.

TERS FONKSİYON / INVERSE FUNCTION

➡ $f^{-1} \neq \frac{1}{f}$

$f : A \to B \quad ; \quad f^{-1} : B \to A$



$f(x) = y \Rightarrow f^{-1}(y) = x$

Ters Fonksiyonun Özellikleri
Properties of Inverse Functions

a. $f(x) = x + a \Rightarrow f^{-1}(x) = x - a$

b. $f(x) = \dfrac{ax+b}{c} \Rightarrow f^{-1}(x) = \dfrac{cx-b}{a}$

c. $f(x) = \dfrac{a}{bx+c} \Rightarrow f^{-1}(x) = \dfrac{-cx+a}{bx}$

d. $f(x) = ax + b \Rightarrow f^{-1}(x) = \dfrac{x-b}{a}$

e. $f(x) = \dfrac{ax+b}{cx+d} \Rightarrow f^{-1}(x) = \dfrac{-dx+b}{cx-a}$

f. $f(x) = \dfrac{ax+b}{cx} \Rightarrow f^{-1}(x) = \dfrac{b}{cx-a}$

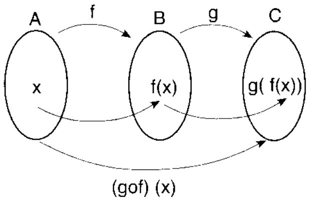
g. $f(x) = a - x \Rightarrow f^{-1}(x) = a - x$

h. $f(x) = \dfrac{b}{x} \Rightarrow f^{-1}(x) = \dfrac{b}{x}$

k. $f(x) = a^x \Rightarrow f^{-1}(x) = \log_a x$

l. $f(x) = \log_a x \Rightarrow f^{-1}(x) = a^x$

BİLEŞKE FONKSİYON / COMPOSITE FUNCTION



(gof) (x) = g [f (x)]

NOT

- ✓ *(fog)(x): f fonksiyonundaki x lerin yerine g(x) konulur.*
  Insert g(x) instead of x in f(x).
- ✓ *(gof)(x): g fonksiyonundaki x lerin yerine f(x) konulur.*
  Insert f(x) instead of x in g(x).

Bileşke Fonksiyonunun Özellikleri
Properties of Composite Functions

1. $fog \neq gof$
2. $(fog)oh = fo(goh)$
3. $(fog)^{-1}(x) = (g^{-1}of^{-1})(x)$
4. $(f^{-1}of)(x) = (fof^{-1})(x) = I(x)$
5. $(foI)(x) = (Iof)(x) = f(x)$
6. $(fog)(x) = h(x) \Rightarrow g(x) = f^{-1}(h(x))$
7. $(fog)(x) = h(x) \Rightarrow f(x) = h(g^{-1}(x))$

İŞLEM ve MODÜLER ARİTMETİK
OPERATION and MODULER SYSTEM

İŞLEM / OPERATION

Tanım: A ≠ ∅ olmak üzere A x A kümesinden A'ya tanımlanan her fonksiyona, A'da **ikili işem** ya da kısaca **işlem** denir.

şlemler ⊕, ⊙, ✳, □, Δ gibi simgelerle gösterilir.

Definition: Let A ≠ Ø, each function defined from AxA to A is called as a **binary operation**, or **operation**.

Operation are shown by symbols like ⊕, ⊙, ✳, □, Δ etc.

İşlemin Özellikleri
Properties of Operations

1. **Kapalılık Özelliği / Closure Property**

   A kümesi üzerinde tanımlanan bir Δ işlemi verilmişken,

   $\forall x, y \in A$ için $x \Delta y \in A$ ise, A kümesi Δ işlemine göre **kapalıdır** denir.

   An operation Δ defined on the set A is closed if for

   $\forall x, y \in A$, $x \Delta y \in A$.

2. **Değişme Özelliği / Commutative Property**

   A kümesi üzerinde tanımlanan bir Δ işlemi verilmişken,

   $\forall x,y \in A$ için $x \Delta y = y \Delta x$ ise, Δ işlemi **değişme özelliğine** sahiptir denir.

   An operation Δ defined on the set A is commutative if for $\forall x,y \in A$, $x \Delta y = y \Delta x$.

3. **Birleşme Özelliği / Associative Property**

   A kümesi üzerinde tanımlanan bir Δ işlemi verilmişken,

   $\forall x, y, z \in A$ için $(x \Delta y) \Delta z = x \Delta (y \Delta z)$ ise, Δ işlemi **birleşme özelliğine** sahiptir denir.

   An operation Δ defined on the set A is associative if for

   $\forall x, y, z \in A$

   $(x \Delta y) \Delta z = x \Delta (y \Delta z)$

4. **Dağılma Özelliği / Distributive Property**

   A kümesi üzerinde tanımlanan Δ ve $\square$ işlemlerinde $\forall x,y \in A$ için

   $x \Delta (y \square z) = (x \Delta y) \square (x \Delta z)$ ise, Δ işlemi, $\square$ işlemi üzerinde **dağılma özelliğine** sahiptir denir.

   Let Δ and $\square$ be are two operations defined on the set A, if $\forall x,y \in A$,

   $x \Delta (y \square z) = (x \Delta y) \square (x \Delta z)$, Δ is distributive over $\square$.

5. **Birim (Etkisiz) Eleman / Identity Element**

   A kümesi üzerinde tanımlanan bir Δ işleminde,

   $\forall x \in A$ için $x \Delta e = e \Delta x = x$ olacak biçimde $e \in A$ varsa $e \in A$ ya Δ işlemine göre **etkisiz eleman** denir.

   Let Δ be an operation on the set A,

   If for $\forall x \in A$, $x \Delta e = e \Delta x = x$, $e \in A$ is identity element of the operation Δ.

NOT

Bir işlemin birim elemanı varsa bir tanedir.

The identity element is unique, if it exists.

TERS ELEMAN / INVERSE ELEMENT

A kümesi üzerinde tanımlanan Δ işleminde, A'nın Δ işlemine göre birim elemanı e ise $\forall x \in A$ için $x \Delta y = y \Delta x = e$
koşulunu sağlayan $y \in A$ varsa bu y elemanına Δ işlemine göre x'in tersi denir ve $x^{-1} = y$ biçiminde gösterilir.

For an operation Δ defined on the set A, if identity element for the set A under the operation Δ is a and f for $\forall x \in A$ there exist $y \in A$ satisfying $x \Delta y = y \Delta x = e$, y is say to be the inverse of x under Δ and denoted as $x^{-1} = y$.

YUTAN ELEMAN / NULL ELEMENT

Tanım: A kümesi üzerinde bir Δ işlemi verildiğinde,
$\forall x,y \in A$ için $x \Delta y = y \Delta x = y$ ise, y sayısına Δ işleminin **yutan elemanı** denir.

Definition: Let Δ be an operation is defined on the set A.
If for $\forall x,y \in A$, $x \Delta y = y \Delta x = y$ then y is called **the null element.**

MODÜLER ARİTMETİK / MODULER ARITHMETICS

Tanım: $m > 1$, $m \in Z$ olmak üzere, Z de tanımlanan,
$\beta = \{(x, y) : m \text{ böler } x - y\}$ bağıntısı bir denklik bağıntısıdır. Bu denklik,

$$\begin{array}{r|l} x & m \\ \cline{2-2} -\;\; & k \\ \hline y & \end{array} \quad , 0 \le y < m$$

olup $x = km + y$ biçiminde gösterilir.

Örneğin, Z'nin 5 ile bölümünden kalanlar 0, 1, 2, 3, 4 olup, $Z_5 = \{0, 1, 2, 3, 4\}$ ile gösterilir.
Genel olarak, $Z / m = \{0, 1, 2, 3, \ldots, m - 1\}$ $(m \in N^+)$ dır.

Definition: Provided that $m > 1$, $m \in Z$. The relation $\beta = \{(x, y) : m \text{ divides } x - y\}$, defined in Z, is an **equivalence relation.**
This equivalence is

$$\begin{array}{r|l} x & m \\ \cline{2-2} -\;\; & k \\ \hline y & \end{array} \quad , 0 \le y < m$$

and denoted by $x = km + y$.

For example, the remainders from division Z by 5 are 0, 1, 2, 3, 4 and denoted by
$Z_5 = \{0, 1, 2, 3, 4\}$.
In general it is shown as:
$Z / m = \{0, 1, 2, 3, \ldots, m - 1\}$ $(m \in N^+)$.

ÖZELLİKLER / PROPERTIES

$x \equiv y \pmod{m}$
$u \equiv v \pmod{m}$ için (for)
1. $x + u \equiv y + v \pmod{m}$
2. $x - u \equiv y - v \pmod{m}$
3. $x \cdot u \equiv y \cdot v \pmod{m}$
4. $x^n \equiv y^n \pmod{m}$
5. $a \cdot x \equiv b \cdot y \pmod{m}$

Bir Sayının Kuvvetinin Birler Basamağı
The units place of exponent of any number

Bir sayının birler basamağını bulma işlemi mod (10) a göre kalan bulma işlemidir.
Finding the units digit of any number, is finding the remainder of that number by mod (10).

KALANLAR KÜMESİ / REMAINDERS SET

$a, b, m \in Z$, $m > 1$ olmak üzere,
$a \equiv b \pmod{m}$ bağıntısı denklik bağıntısıdır ve a kümesi bu denklik sınıflarına ayrılabilir.
$0 < p < m$ olup $\bar{p}$ ile gösterilen bu sınıfın anlamı, m ye bölündüğünde **p** kalanını veren tamsayıların oluşturduğu kümedir.

Provided that $a, b, m \in Z$, $m > 1$,
the relation $a \equiv b \pmod{m}$ is an equivalence relation and "a" can be separeted to the equivalence.
Provided $0 < p < m$ and denoted by $\bar{p}$ the meaning of this set is: The integer set gives the remainder **p** when each elements are divided by m.

$$\bar{p} = \{ x \mid p \equiv x \pmod{m} \}$$

SAYISAL YETENEK / MATHEMATICAL SKILL

Sayısal Yetenek: Sayılar arasındaki ilişkiyi görebilme, sayılarla verilen problemleri çözebilme gücüdür. Sayısal yetenek; hesaplama ve sayısal düşünme yeteneği olarak iki alt başlıkta incelenir.

Mathematical Skill: As it's known, this skill is power of ability of seeing relation among numbers and solving problems given with numbers. Mathematical skill is divided into two titles as calculation skill and mathematical thinking skill.

Hesaplama: Dört işlemle akıldan problem çözebilme, bir işlemdeki hatayı görebilme gücü olarak tanımlanır.

Calculation: It's calculating skill which is defined as power solving problems with four operations in mind and seeing the mistake in an operation.

Sayısal Düşünme Yeteneği: Bir tür teorik ve sembolik düşünme gücü olup karmaşık sayısal ilişkileri görebilme, cebir problemlerini çözebilme olarak tanımlanır. Sayısal düşünme yeteneği matematik, istatistik gibi disiplinlerde ve fizik, kimya gibi temel bilimlerde kullanılır.

Mathematical Thinking Skill: This is kind of power of thinking teorically and symbolically. It's defined as power of seeing complicating relation and solving the algebra problems. Mathematical skill is used in disciplines such as mathematics and statistics, in basic sciences such as physics and chemistry.

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $P(n, 3) = 60 \Rightarrow \mathbf{n = ?}$

Yanıt / The answer is **5**

2. $P(n, 3) : P(n, 2) = 20 \Rightarrow \mathbf{n = ?}$

Yanıt / The answer is **22**

3. $P(n, 0) + P(n, 1) + P(n, 2) = 10 \Rightarrow \mathbf{n = ?}$

Yanıt / The answer is **3**

4. $P(n, 3) = 20 \cdot P(n, 1) \Rightarrow \mathbf{n = ?}$

Yanıt / The answer is **6**

5. $C(8, 5) + \binom{8}{3} = ?$

Yanıt / The answer is **112**

6. $\binom{n}{0} + \binom{n}{n} = x \Rightarrow C(5, x) = ?$

Yanıt / The answer is **10**

7. $\binom{5}{0} + \binom{5}{1} + \ldots + \binom{5}{5} = ?$

Yanıt / The answer is **32**

8. $\binom{14}{2x} = \binom{14}{x+2} \Rightarrow \sum x = ?$

Yanıt / The answer is **6**

9. $\frac{1}{5}P(5,4)-\frac{1}{3}\cdot P(3,2)=?$

Yanıt / The answer is **22**

10. "SERRA" **sözcüğünün harfleri ile anlamlı ya da anlamsız 5 harfli kaç farklı sözcük yazılabilir?**

How many arrangenments can be made from the letters of the word 'SERRA' when all are taken one at a time?

Yanıt / The answer is **60**

11. **A = {0, 3, 5, 7, 8} kümesinin elemanları ile rakamları birbirinden farklı 3 basamaklı kaç sayı yazılabilir?**

How many three-digit numbers all different from each other, can be written by using the members of the set A = {0, 3, 5, 7, 8}?

Yanıt / The answer is **48**

12. **A = {0, 1, 2, 3, 4, 5} kümesinin elemanları ile rakamları farklı 4000'den büyük 4 basamaklı kaç sayı yazılabilir?**

How many four-digit numbers which are greater than 4000, can be written by using the members of the set A = {0,1, 2, 3, 4, 5}?

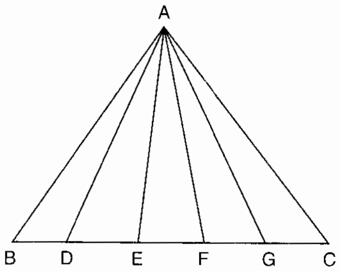
Yanıt / The answer is **120**

13. **10 avcının katıldığı bir hedefi vurma yarışmasında sonuç kaç farklı şekilde olabilir?**

10 hunters participated in a shooting contest. How many different results may appear?

Yanıt / The answer is **2^{10}**

14.

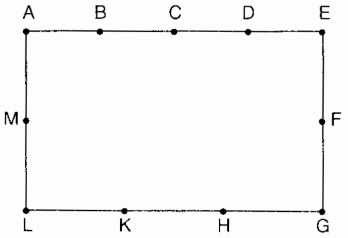


Yukarıdaki şekilde kaç tane üçgen vardır?

How many triangles are there in the figure?

Yanıt / The answer is **15**

15.

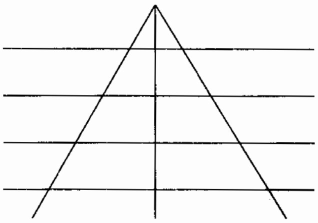


Yukarıdaki dikdörtgen üzerinde verilen 11 noktayı köşe kabul eden kaç üçgen çizilebilir?

How many triangles can be drawn by using 11 points located on the rectangle in the figure as the edges of the triangles?

Yanıt / The answer is **149**

16.



Düzlemde bir noktadan geçen 3 doğruyu, birbirine paralel 4 doğru şekildeki gibi kesmiştir. Buna göre, bu şekilde kaç tane yamuk vardır?

3 lines that passes through one point are intersected by 4 parallel lines. According to that, how many trapezoids are there in the figure?

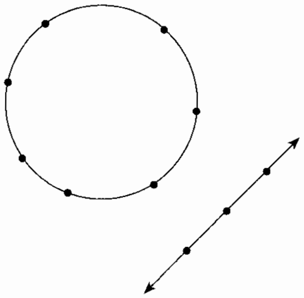
Yanıt / The answer is **18**

17. **12 kişilik bir sınıftan, bilgi yarışmasına katılması için üç öğrenci seçilecektir. Bu seçim kaç farklı şekilde yapılabilir?**

3 students will be chosen from among a class of 12 students to participate in a knowledge contest. In how many ways can this selection be done?

Yanıt / The answer is **220**

18.

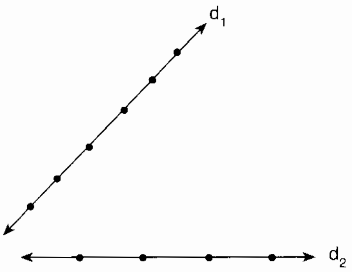


Yukarıdaki şekilde, çember üzerinde 7 nokta ile çemberi kesmeyen doğru üzerinde 3 nokta veriliyor. Köşeleri bu 10 noktadan üçü olan kaç farklı üçgen çizilebilir?

7 points located on a circle and 3 points located on a line that does not intersect the circle is given above in the figure. How many different triangles can be drawn by using these 10 points as the edges of the triangles?

Yanıt / The answer is **119**

19.

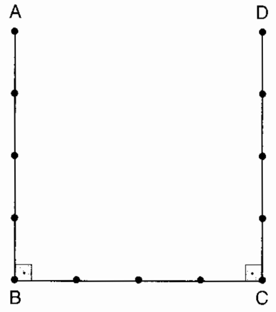


d_1 doğrusu üzerinde 6, $d_2$doğrusu üzerinde 4 nokta veriliyor. Köşeleri bu noktalar olan kaç üçgen çizilebilir?

There are 6 points located on the line d_1 and 4 points located on the line d_2 are given in the figure above. How many triangles can be drawn by using these points as the edges of the triangles?

Yanıt / The answer is **96**

20.

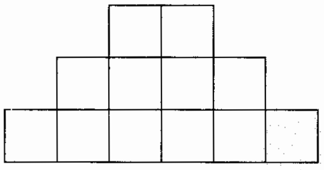


Şekilde $[AB] \perp [BC]$, $[BC] \perp [CD]$ dir. Köşeleri şekildeki noktalardan oluşan kaç farklı dik üçgen çizilebilir?

In the figure above, $AB \perp BC$ and $BC \perp CD$. How many right triangles can be drawn by using these points as the edges of the triangles?

Yanıt / The answer is **32**

21.

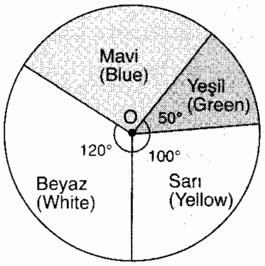


Şekildeki eş karelerden 6 tanesi sarı diğerleri mavi olmak üzere kareler rastgele boyanırsa, kaç farklı görüntü oluşur?

From among six identical squares having equal sides, how many different types of figures can be obtained randomly?

Yanıt / The answer is **924**

22.



Şekildeki O merkezli dairesel hedef tahtasını her atışta vuran bir atıcının ilk atışta mavi bölmeyi vurma olasılığı kaçtır?

What is the probability of shooting the blue painted area for a shooter that shoots the circle formed target in the figure each time he tries?

Yanıt / The answer is **1/4**

---

23. $E = \{A, B, C\}$,

$P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ $\Rightarrow$ $\mathbf{P(C) = ?}$

Yanıt / The answer is **1/6**

---

24. **Bir avcının hedefi vurma olasılığı 2/7 ise bu avcının hedefi vuramama olasılığı kaçtır?**

If the probability of a hunter's hitting the target is 2/7, what is the probability of him not hitting the target?

Yanıt / The answer is **5/7**

---

25. **Bir madeni para ile bir zar aynı anda havaya atılıyor. Buna göre, paranın tura ve zarın 4'ten büyük sayılı gelme olasılığı kaçtır?**

A coin is tossed and a dice is rolled at the same time. What is the probability of getting a head and getting a number greater than 4?

Yanıt / The answer is **1/6**

---

26. $P(A) = \frac{3}{4}$, $P(B) = \frac{1}{4}$, $P(A \cup B) = \frac{4}{5}$ $\Rightarrow$ $\mathbf{P(A \cap B) = ?}$

Yanıt / The answer is **1/5**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. **$P(6, 3) + P(5, 4) + P(3, 1) = ?$**

A) 143 B) 158 C) 192 D) 200 E) 243

2. $P(n, r) = 60 \Rightarrow$ **$\max(n) = ?$**

A) 5 B) 10 C) 20 D) 30 E) 60

3. $P(7, r) = 42 \Rightarrow$ **$r = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

4. $P(n, 1) + n^2 - 6 = 0 \Rightarrow$ **$n = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

5. $P(2n+1, 2n) = 120 \Rightarrow$ **$n = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

6. $P(x, y) = 120 \Rightarrow$ **$\max(x + y) = ?$**

A) 5 B) 6 C) 9 D) 120 E) 121

7. $P(n, 5) = 90 \cdot 56 \cdot 6 \Rightarrow$ **$n = ?$**

A) 7 B) 8 C) 9 D) 10 E) 11

8. $\dfrac{P(n, 4)}{P(n, 2)} = n^2 - 4n \Rightarrow$ **$n = ?$**

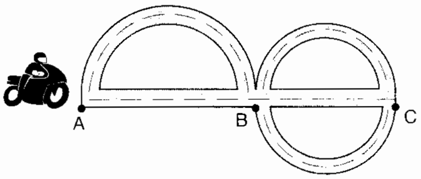
A) 5 B) 6 C) 7 D) 8 E) 9

9. **10 kişilik bir Matematik öğretmeni grubundan, önce bir Zümre başkanı daha sonra da Zümre başkan yardımcısı seçilecektir. Bu seçim kaç değişik şekilde yapılabilir?**

From among a group of Mathematics teachers, first the head of department and later assistant head will be selected. In how many different ways can this selection be done?

A) 10 B) 19 C) 81 D) 90 E) 120

10.



Şekildeki hareketli, her seferinde B'den geçmek koşulu ile A noktasından C noktasına kaç farklı şekilde gidilebilir?

In how many different ways can the motorcycle rider in the figure travel from Point A to Point C with condition of passing through Point B?

A) 2 B) 4 C) 6 D) 8 E) 10

11. **A = {1, 3, 4, 8} kümesinin elemanları ile 3 basamaklı kaç sayı yazılabilir?**

How many three-digit numbers can be written by using the members of the set A = {1, 3, 4, 8}?

A) 4 B) 12 C) 36 D) 64 E) 128

12. **A = {1, 2, 3, 4, 5} kümesinin elemanları ile rakamları birbirinden farklı 3 basamaklı kaç tane sayı yazılabilir?**

How many three-digit numbers all different from each other, can be written by using the members of the set A = {1, 2, 3, 4, 5}?

A) 15 B) 30 C) 60 D) 70 E) 85

13. **A = {1, 2, 3, 4, 5} kümesinin elemanları ile rakamları birbirinden farklı 4 basamaklı kaç çift sayı yazılabilir?**

How many four-digit even numbers all different from each other, can be written by using the members of the set A = {1, 2, 3, 4, 5} ?

A) 12 B) 16 C) 20 D) 24 E) 48

14. **5 kişi yuvarlak bir masa etrafında kaç farklı şekilde oturabilir?**

In how many different ways can 5 persons sit around a round table?

A) 12 B) 16 C) 18 D) 24 E) 48

15. "METROPOL" **sözcüğündeki harflerin yerleri değiştirilerek, anlamlı ya da anlamsız kaç sözcük yazılabilir?**

How many different meaningful or meaningless words can be written by using the letters of the word 'METROPOL'?

A) 19180 B) 19800 C) 20160

D) 20180 E) 20260

16. **5 sayı tabanını göstermek üzere $(xyz)_5$ olacak şekilde üç basamaklı kaç sayı yazılabilir?**

How many different three-digit numbers can be formed wit the base as five?

A) 120 B) 108 C) 100

D) 96 E) 72

Yanıtlar / Answers

1. E	2. E	3. B	4. B	5. B	6. E	7. D	8. B
9. D	10. C	11. D	12. C	13. E	14. D	15. C	16. C

1. $P(4,2)+C(5,2)=2x \Rightarrow \binom{x}{9}=$ **?**

A) 40 B) 45 C) 50
D) 55 E) 60

2. **P(5, 3) – C(5, 3) = ?**

A) 10 B) 20 C) 30
D) 40 E) 50

3. $\binom{10}{x+3}=\binom{10}{2x+1} \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3
D) 4 E) 5

4. $\binom{n}{1}+\binom{n}{2}+\ldots+\binom{n}{n}=63 \Rightarrow$ **n = ?**

A) 4 B) 5 C) 6
D) 7 E) 8

5. $\binom{n}{3}=56 \Rightarrow$ **n = ?**

A) 4 B) 5 C) 6
D) 7 E) 8

6. $\binom{n}{4}=\binom{n}{3} \Rightarrow$ **n = ?**

A) 5 B) 6 C) 7
D) 8 E) 9

7. $\binom{7}{1}+\binom{7}{2}+\ldots+\binom{7}{6}=$ **?**

A) 2^6 B) 2^7 C) 2^7-2
D) 2^7-6 E) 2^7-8

8. $\binom{n}{0}+\binom{n}{1}=2n-4 \Rightarrow$ **n = ?**

A) 1 B) 2 C) 3
D) 4 E) 5

9. **Bir hastanede çalıştırılmak üzere 3 doktor, 2 hemşire ve 4 hasta bakıcı içerisinden 1 doktor, 1 hemşire ve 2 hasta bakıcı kaç farklı şekilde seçilebilir?**

In how many different ways can 1 doctor, 1 nurse and 1 caretaker be accepted for a job in a hospital from among 3 doctors, 2 nurses and 4 caregivers?

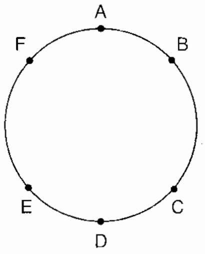
A) 8 B) 12 C) 24 D) 36 E) 48

10. **6 öğrencinin katıldığı bir Matematik sınavı, başarı yönünden kaç farklı şekilde sonuçlanabilir?**

In how many different ways the results may appear in a math test that is applied to 6 students?

A) 16 B) 24 C) 32 D) 64 E) 90

11.

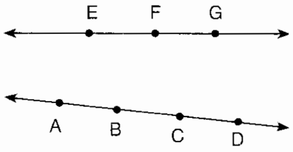


Şekildeki çemberin üzerinde bulunan 6 nokta, köşeleri olacak şekilde kaç farklı üçgen çizilebilir?

How many different triangles can be drawn with the condition of using the 6 points on the circle in the figure above as the edges of triangles?

A) 6 B) 9 C) 12 D) 18 E) 20

12.



Şekilde verilen doğrular üzerindeki noktalar köşeleri olacak şekilde kaç farklı üçgen çizilebilir?

How many different triangles can be drawn with the condition of using the points on the lines in the figure as the edges of triangles?

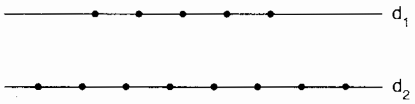
A) 32 B) 30 C) 28 D) 26 E) 24

13. **10 soruluk bir sınavda öğrencilerin 6 soruyu çözmesi isteniyor. Buna göre, sınava giren bir öğrenci kaç farklı seçim yapabilir?**

In an examination comprising of 10 questions, students must solve 6 questions out of 10 in a test. According to that how many different choices can be made by a student who takes the test?

A) 180 B) 190 C) 200 D) 210 E) 220

14.

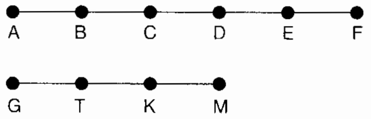


$d_1 // d_2$, d_1 doğrusu üzerinde 5 farklı nokta, d_2 noktası üzerinde 8 farklı nokta vardır. Bu 13 nokta kaç farklı üçgen oluşturabilir?

There are 5 different points on the line d_1, there are 8 different points on the line d_2 and $d_1 || d_2$. How many different triangles can be drawn by using these 13 points?

A) 180 B) 190 C) 200
D) 210 E) 220

15.



Şekildeki noktalar kullanılarak kaç tane üçgen oluşturulabilir?

How many triangles can be constructed by using the dots in the figure?

A) 105 B) 135 C) 120 D) 90 E) 96

(19 MAYIS ÜNİVERSİTESİ - YÖS 2016)

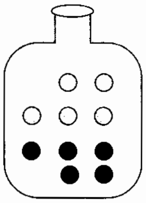
Yanıtlar / Answers							
1. D	2. E	3. B	4. C	5. E	6. C	7. C	8. E
9. D	10. D	11. E	12. B	13. D	14. E	15. E	

1. **Bir zar ile bir metal para aynı anda havaya atılıyor. Paranın tura ve zarın 5 gelme olasılığı kaçtır?**

A dice is rolled and a coin is tossed at the same time. What is the probability of getting a head and getting 5?

A) $\frac{1}{12}$ B) $\frac{1}{10}$ C) $\frac{1}{8}$ D) $\frac{1}{6}$ E) $\frac{1}{4}$

2.

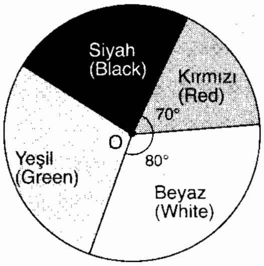


Bir kavanozda 5 siyah, 3 sarı, 2 beyaz renkli bilye vardır. Kavanoza geri atmamak koşulu ile arka arkaya 3 bilye çekiliyor. Bilyelerin farklı renkte olma olasılığı kaçtır?

There are 5 black, 3 yellow, and 2 white marbles in a jar. 3 marbles are picked consecutively with the condition of not putting back in the jar. What is the probability of getting all the marbles with the same color?

A) $\frac{1}{10}$ B) $\frac{1}{9}$ C) $\frac{1}{6}$ D) $\frac{1}{4}$ E) $\frac{1}{3}$

3.



Bir atıcı şekildeki O merkezli daireyi her atışta vurabiliyor. İki atış yapan bu atıcısın her iki atışta da yeşil renkli alanı vurma olasılığı kaçtır?

A shooter can shoot the disc that has the center O in the figure, each time he tries. What is the probability of shooting the green painted area at each 2 shots?

A) $\frac{1}{12}$ B) $\frac{1}{9}$ C) $\frac{2}{9}$ D) $\frac{1}{6}$ E) $\frac{2}{3}$

4. **Bir çift zar atılıyor. Her iki zarın da asal sayı gelme olasılığı kaçtır?**

2 coins are tossed. What is the probability of getting 2 prime numbers?

A) $\frac{1}{12}$ B) $\frac{1}{9}$ C) $\frac{1}{6}$ D) $\frac{1}{4}$ E) $\frac{1}{2}$

5. **Bir torbaya 1'den 10'a kadar numaralandırılmış 10 top konuyor. Rastgele seçilen bir topun çift ya da 5'ten küçük sayılı gelme olasılığı kaçtır?**

10 balls that enumerated from 1 to 10, are put in a pouch. What is the probability of getting a number is equal or smaller than 5 when a ball is picked randomly?

A) $\frac{1}{5}$ B) $\frac{2}{5}$ C) $\frac{1}{2}$ D) $\frac{9}{10}$ E) $\frac{7}{10}$

6. **5 tane metal para aynı anda atıldığında 2'sinin yazı 3'ünün tura gelme olasılığı kaçtır?**

What is the probability of getting 2 heads and 3 tails when 5 coins are tossed at the same time?

A) $\frac{1}{16}$ B) $\frac{1}{8}$ C) $\frac{3}{16}$ D) $\frac{1}{4}$ E) $\frac{5}{16}$

7. **A = {N, İ, L, Ü, F, E, R} kümesinin alt kümelerinin tamamı aynı büyüklükte birer karta yazılıp bir torbaya konuluyor. Bu torbadan rastgele çekilen bir kartın üzerinde 3 harf olma olasılığı kaçtır?**

All of the subsets of the set A = {N,İ,L,Ü,F,E,R} are written on same sized cards and then put in a pouch. What is the probability of getting a card which has 3 letters written on when a card is randomly picked?

A) $\frac{3}{128}$ B) $\frac{7}{128}$ C) $\frac{21}{128}$

D) $\frac{35}{128}$ E) $\frac{43}{128}$

8. **8 evli çift arasından rastgele seçilen 2 kişinin karı-koca olma olasılığı kaçtır?**

What is the probability of choosing a married couple when 2 persons are chosen randomly from among 8 married couple?

A) $\frac{1}{32}$ B) $\frac{1}{16}$ C) $\frac{1}{15}$ D) $\frac{1}{8}$ E) $\frac{2}{15}$

9. **Bir çift zar atılıyor. Üste gelen sayıların toplamının 8 olma olasılığı kaçtır?**

What is the probability of getting 2 numbers which add up to 8 when 2 dice are tossed?

A) $\frac{1}{12}$ B) $\frac{5}{18}$ C) $\frac{1}{6}$ D) $\frac{5}{36}$ E) $\frac{1}{9}$

10. **Bir metal para ile bir zar birlikte atılıyor. Paranın tura, zarın tek sayı gelme olasılığı kaçtır?**

A coin is tossed and a dice is rolled at the same time. What is the probability of getting a head and getting an odd number?

A) $\frac{1}{6}$ B) $\frac{1}{4}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$ E) $\frac{5}{12}$

11. **Hilesiz bir zarın 2 yüzü beyaz 3 yüzü mavi ve 1 yüzü sarıya boyanıyor. Zar peş peşe iki kez atıldığında, üst yüze beyaz gelme olasılığı kaçtır?**

2 sides of a dice are painted white, 3 sides of a dice are painted blue and one side of a dice is painted yellow. What is the probability of getting white sides at both of the times when a dice is rolled twice?

A) $\frac{1}{18}$ B) $\frac{5}{18}$ C) $\frac{5}{12}$ D) $\frac{1}{9}$ E) $\frac{2}{9}$

12. **Bir zar ile bir metal para aynı anda atılıyor. Zarın üste gelen yüzünün 4 veya 4'ten büyük, paranın ise tura gelme olasılığı kaçtır?**

A dice is rolled and a coin is tossed at the same time. What is the probability of getting a number is equal to 4 or greater than 4, and getting a head?

A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) $\frac{1}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{2}$

Yanıtlar / Answers

1. A 2. D 3. B 4. D 5. E 6. E 7. D 8. C
9. D 10. B 11. D 12. D

1. **Bir kutudaki 15 kalemden 3'ü bozuktur. Bu kutudan rastgele alınan iki kalemin her ikisininde bozuk olması olasılığı kaçtır?**

3 of the pencils in a pencil box that contains 15 pencils is broken. What is the probability of picking 2 broken pencils when they are picked randomly?

A) $\frac{1}{25}$ B) $\frac{1}{27}$ C) $\frac{1}{35}$ D) $\frac{1}{40}$ E) $\frac{1}{42}$

2. **Bir kasadaki elmaların %25'i çürüktür. Kasada 40 elma olduğu bilindiğine göre, kasadan rastgele alınan 2 elmanın her ikisinin de sağlam olması olasılığı kaçtır?**

25 percent of the apples in a box are spoiled. If there are 40 apples in that box, what is the probability of picking two unspoiled apples when they are picked randomly?

A) $\frac{29}{40}$ B) $\frac{9}{16}$ C) $\frac{8}{27}$ D) $\frac{15}{39}$ E) $\frac{29}{52}$

3. **Bir avcının X hedefini vurma olasılığı 1/2, aynı avcının Y hedefini vurma olasılığı 1/3'tür. Buna göre bu avcının iki atışta X ve Y hedeflerini vurma olasılığı kaçtır?**

The probability of hitting the target X for a hunter is 1/2, the probability of hitting the target Y for the same hunter is 1/3. What is the probability for this hunter to hit the the target X and the target Y when he shoots twice?

A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) $\frac{1}{2}$ D) $\frac{1}{4}$ E) $\frac{1}{6}$

4. **Aralarında Begüm ve Serra'nında bulunduğu 5 kişi yanyana sıralanacaktır. Begüm ve Serra'nın yanyana olma olasılığı kaçtır?**

A group that includes Begüm and Serra will stand in a line. What is the probability of standing side by side for Begüm and Serra?

A) $\frac{1}{5}$ B) $\frac{2}{5}$ C) $\frac{3}{5}$ D) $\frac{1}{6}$ E) $\frac{5}{6}$

5. **Anne, Baba ve 3 çocuktan oluşan bir aile yuvarlak bir masa etrafında rastgele oturacaklardır. Buna göre, anne ile babanın yanyana oturmuş olma olasılığı kaçtır?**

A family that consists of a mother, a father and 3 kids will be seated around a round table. What is the probability of appearing side by side for mother and father?

A) $\frac{1}{5}$ B) $\frac{2}{5}$ C) $\frac{1}{2}$ D) $\frac{3}{5}$ E) $\frac{3}{4}$

6.

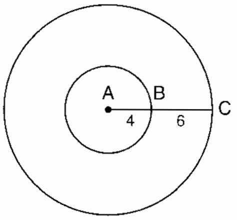
	gözlüklü (wearing glasses)	gözlüksüz (not wearing glasses)
Erkek (Male)	3	7
Kız (Famale)	1	5

Yukarıdaki tabloda 16 kişilik bir sınıftaki öğrencilerin dağılımı gösterilmiştir. Buna göre, sınıftan rastgele seçilen bir öğrencinin erkek veya gözlüksüz olması olasılığı kaçtır?

The table above shows the distrubition of the students of a classroom which has 16 students. According to that what is the probability of picking a male student or a student not wearing glasses when a student from among the classroom picked randomly?

A) $\frac{1}{2}$ B) $\frac{5}{16}$ C) $\frac{5}{8}$ D) $\frac{7}{8}$ E) $\frac{15}{16}$

7.



A noktası şekildeki her iki dairenin de merkezidir. |AB| = 4 birim, |BC| = 6 birim, şekli hedef olarak belirleyen bir atıcının ilk atışta hedefi vurduğu biliniyor. Buna göre atıcının küçük daireyi vurmuş olması olasılığı kaçtır?

In the figure above the Point A is the center of both circles and |AB| = 4, |BC| = 6. It is known that a shooter who accepted the figure as the target, hit the target at the first shoot. What is the probability for this shooter to hit the smaller circle?

A) $\frac{2}{5}$ B) $\frac{4}{15}$ C) $\frac{3}{5}$ D) $\frac{4}{25}$ E) $\frac{9}{25}$

8. **Caner'in bir hedefi vurma olasılığı 1/4'tür. Buna göre iki atış yapan Caner'in hedefi ilk defa ikinci atışta vurma olasılığı kaçtır?**

The probability of hitting the target for Caner is 1/4. What is the probability of hitting the target for the first time at the second shot for him?

A) $\frac{1}{16}$ B) $\frac{1}{8}$ C) $\frac{3}{16}$ D) $\frac{1}{4}$ E) $\frac{1}{2}$

9. **Bir torbada 2 mavi, 4 sarı ve 6 siyah bilye vardır. Buna göre torbadan rastgele seçilen iki bilyeninde renginin sarı olma olasılığı kaçtır?**

There are 2 blue, 4 yellor and 6 black marbles in a pouch. What is the probability of picking 2 yellow marbles when 2 marbles are picked from the pouch randomly?

A) $\frac{1}{12}$ B) $\frac{1}{11}$ C) $\frac{2}{11}$ D) $\frac{5}{12}$ E) $\frac{3}{11}$

10. **A = {1, 2, 3, 4, 5, 6, 7, 8, 9} kümesinden rastgele seçilen bir sayının asal sayı veya 6'dan küçük sayı olması olasılığı kaçtır?**

What is the probability of choosing a number which is equal to six or smaller than six from the set A = {1, 2, 3, 4, 5, 6, 7, 8, 9}?

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) $\frac{2}{3}$ E) $\frac{3}{4}$

11. **İki zar atıldığında üst yüze gelen sayılar toplamının 6 olma olasılığı kaçtır?**

What is the probability of getting two numbers that add up to 6 when 2 dice are rolled?

A) $\frac{1}{12}$ B) $\frac{1}{9}$ C) $\frac{5}{36}$ D) $\frac{1}{6}$ E) $\frac{7}{36}$

12. **Bir zar atıldığında üst yüze asal sayı geldiği bilindiğine göre, çift sayı gelme olasılığı kaçtır?**

What is the probability of getting an even number if getting a prime number is known when a dice is rolled?

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{5}$ E) $\frac{1}{6}$

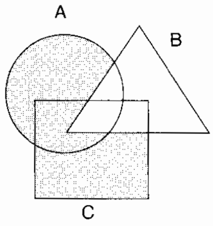
Yanıtlar / Answers

1. C 2. E 3. E 4. B 5. C 6. E 7. D 8. C
9. B 10. D 11. C 12. B

Alıştırmalar / Exercises

Alıştırma / Exercise 1

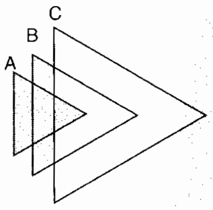
1.



Taralı bölgeler / *The Shaded Regions* = ?

Yanıt / The answer is **(A∪C)\ B**

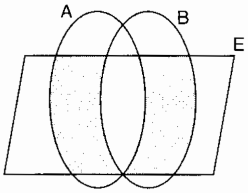
2.



Taralı bölgeler / *The Shaded Regions* = ?

Yanıt / The answer is **A ∪ (B \ C)**

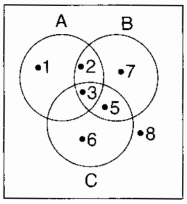
3.



Taralı bölgeler / *The Shaded Regions* = ?

Yanıt / The answer is **E ∩ [(B \ A) ∪ (A \ B)]**

4.



⇒ [(A' ∪ B) − C] = ?

Yanıt / The answer is **{2, 7, 8}**

5. A = {a, b, c},
A ∪ B = {a, b c, d, e, f},
A ∩ B = {a, c} ⇒ **B = ?**

Yanıt / The answer is **{a, c, d, e, f}**

6. A∩B = {1, 2, 3}
A∩C = {2, 3, 4, 5}
⇒ **A∩(B∪C) = ?**

Yanıt / The answer is **{1, 2, 3, 4, 5}**

7. $A \cup B = \{1, 2, 3, 4\}$

$A \cup C = \{2, 3, 4, 5\}$

$\Rightarrow$ **$A \cup (B \cap C) = ?$**

Yanıt / The answer is **$\{2, 3, 4\}$**

---

8. **$[(B - A) \cap (A \cup B')] = ?$**

Yanıt / The answer is $\varnothing$

---

9. $A \cap B \neq \varnothing$

$\Rightarrow$ **$(A \cup \varnothing) \cap (A \cup A) \cap (A' \cup B) = ?$**

Yanıt / The answer is **$A \cap B$**

---

10. $A = \{ x : 2^x < 11, \ x \in N\} \Rightarrow$ **$n(A) = ?$**

Yanıt / The answer is **4**

---

11. $A = \{(x,y) : x,y \in N$ ve (and) $x + y \leq 3\}$

$\Rightarrow$ **$n(A) = ?$**

Yanıt / The answer is **10**

---

12. $A = \{ x : x^3 \leq 75, \ x \in N\}$

$\Rightarrow$ **$n(A) = ?$**

Yanıt / The answer is **5**

13. $$\left.\begin{array}{l} A=\{x:|x-2|\le 4,\ x\in Z\}\\ B=\{x:|3-x|<2,\ x\in Z\}\end{array}\right\}\Rightarrow \mathbf{A\cap B=?}$$

Yanıt / The answer is **{2, 3, 4}**

---

14. $A=\{x : 11 \le x \le 400,\ x = 3k,\ k \in Z^+\}$

$B=\{ y : y < 200,\ y = 8m,\ m \in N\}$

$\Rightarrow$ **$n(A \cup B) = ?$**

Yanıt / The answer is **147**

---

15. $A=\{x : 15 < x < 129,\ x = 4k + 1,\ k \in N\}$

$B=\{ y : 11 \le y < 127,\ y = 6p+1,\ p \in N^+)$

$\Rightarrow$ **$n(A \cap B) = ?$**

Yanıt / The answer is **9**

---

16. $A=\{x : |x-3| \le 39,\ x = 2k,\ k\in Z\}$

$B=\{x : |x-9| \le 36,\ x = 3k,\ k\in Z\}$

$\Rightarrow$ **$n(A\cup B) = ?$**

Yanıt / The answer is **53**

---

17. $M=\{x \mid 10 < x < 119,\ x = 3k + 1,\ k \in N\}$

$\Rightarrow$ **$n(M) = ?$**

Yanıt / The answer is **36**

---

18. $A\cup B=\{x: 2 \le x \le 8,\ x \in Z\}$

$A-B=\{x: 5 \le x \le 8,\ x \in Z\}$

$\Rightarrow$ **$B = ?$**

Yanıt / The answer is **{2, 3, 4}**

19. $A - B = \{x: 1 \leq x \leq 5, x \in Z\}$

$A \cap B = \{x: 6 \leq x \leq 9, x \in Z\}$

$\Rightarrow$ **n(A) = ?**

Yanıt / The answer is **9**

20. $A \cap B = \{x: 2 \leq x \leq 4, x \in Z\}$

$A - B = \{x: 5 \leq x \leq 7, \ x \in Z\}$

$A \cup B = \{x: 1 \leq x \leq 7, x \in Z\}$

$\Rightarrow$ **B = ?**

Yanıt / The answer is **{1, 2, 3, 4}**

21. $n(A \backslash B) = 4$

$n(B) = 7$

$\Rightarrow$ **n(A∪B) = ?**

Yanıt / The answer is **11**

22. $n(B \cap A') = 7$

$n(A \cap B') = 8$

$n(A) = 12$

$\Rightarrow$ **n(A∪B) = ?**

Yanıt / The answer is **19**

23. $A \cup B \neq E$,

$n(A \cap B) = 3$,

$n(A') + n(B') = 25$,

$n(A' \cup B') = 15$

$\Rightarrow$ **n(A∪B) = ?**

Yanıt / The answer is **8**

24. $n(A - B) = 5$,

$n(B - A) = 3 \cdot n(A \cap B)$,

$n(A) = 13$,

$\Rightarrow$ **n(A∪B) = ?**

Yanıt / The answer is **37**

1. $n(A \cup B) = 57$,
$n(A - B) = 20$,
$n(A \cap B) = 10$
$\Rightarrow$ **$n(B - A) = ?$**

Yanıt / The answer is **27**

2. $n(A \cup B) = 15$,
$n(A \cap B) = 5$,
$n(A) = 10$
$\Rightarrow$ **$n(A - B) - n(B - A) = ?$**

Yanıt / The answer is **0**

3. $E = \{x : 1 \le x \le 11,\ x \in N\}$,
$A \cap B = \{2, 4, 6\}$
$A \cap C = \{1, 3, 7, 9\}$
$\Rightarrow$ **$[A \cap (B \cup C)]' = ?$**

Yanıt / The answer is **{5, 8, 10, 11}**

4. $n(A - B) = 2n(A \cap B)$,
$n(B - A) = 3n(A)$,
$n(A \cup B) = 48$ $\Rightarrow$ **$n(A \cap B) = ?$**

Yanıt / The answer is **4**

5. $n(A) = 12$,
$n(B) = 10$
$\Rightarrow$ **$\min[n(A - B - A')] = ?$**

Yanıt / The answer is **2**

6. $A \cup B = [-2, 10)$,
$A \cup C = (3, 14]$
$\Rightarrow$ **$A \cup (B \setminus C') = ?$**

Yanıt / The answer is **(3, 10)**

7. n(A) = 2,

n(B) = 7,

n(C) = 11

$\Rightarrow$ **min(n(A∪B∪C)) = ?**

Yanıt / The answer is **11**

8. n(A) = 6,

n(A∩B) = 4

$\Rightarrow$ **min(n(B)) = ?**

Yanıt / The answer is **4**

9. n(A) + n(A – B) = 32,

n(B) = 12

$\Rightarrow$ **max(n(A∪B)) = ?**

Yanıt / The answer is **28**

10. 2·n(A–B) = 3·n(B–A),

n(A∪B) = 23

$\Rightarrow$ **min(n(B)) = ?**

Yanıt / The answer is **11**

11. A∩C = ∅,

n(A) = 7,

n(B) = n(C) = 9,

n(A ∩ B) = 2,

n(B ∩ C) = 3

$\Rightarrow$ **n(A ∪ B ∪ C) = ?**

Yanıt / The answer is **20**

12. n(A) = 2·n(B)

n(A∪B) + n(A∩B) = 18 $\Rightarrow$ **n(A) = ?**

Yanıt / The answer is **12**

13. $\frac{n(A)}{n(A\cap B)}=\frac{8}{3}$,

$\frac{n(B)}{n(A\cap B)}=\frac{5}{4}$

$\Rightarrow$ **min(n(A∪B)) = ?**

Yanıt / The answer is **35**

14. $n(A\cap B)'=19$,

$n(A\cup B)'=10$

$\Rightarrow$ **n(A – B) + n(B – A) = ?**

Yanıt / The answer is **9**

15. $n(A\cup B) = 56$,

$\frac{n(A)}{7}=\frac{n(A\cap B)}{3}=\frac{n(B)}{10}$

$\Rightarrow$ **n(A∩B) = ?**

Yanıt / The answer is **12**

16. $n(A\cup B) = 29$,

$n(A\cap B) = 3$,

$n(A) = n(B)$

$\Rightarrow$ **n(B – A) = ?**

Yanıt / The answer is **13**

17. $n(A\cap B) = 1$,

$n(A-B) = n(B-A)$

$n(A\cup B) = 5 \Rightarrow$ **n(A) = ?**

Yanıt / The answer is **3**

18. $n(A) = 12$,

$n(B) = 15$,

$2n(A-B) = n(B-A)$

$\Rightarrow$ **n(A∩B) = ?**

Yanıt / The answer is **9**

19. $n(A) = 4n(B)$,

$n(A \cap B) = 3$,

$n(A \cup B) = 42$

$\Rightarrow$ **$n(A - B) = ?$**

Yanıt / The answer is **33**

20. $n(A - B) = 4$,

$n(B - A) = 6$,

$n(A \cup B) = 3n(A \cap B)$

$\Rightarrow$ **$n(A) = ?$**

Yanıt / The answer is **9**

21. $n(A') = 12$,

$n(B) = 9$,

$n(A' \cap B') = 5$

$\Rightarrow$ **$n(A \cap B) = ?$**

Yanıt / The answer is **2**

22. $n(A) = 3n(A \cap \overset{7}{B})$,

$n(B) = 2n(A - B) - 3$,

$n(A \cup B) = 39$

$\Rightarrow$ **$n(A) = ?$**

Yanıt / The answer is **21**

23. $n(B) = n(A - B)$

$n(A \cap B) = \frac{2}{5} \cdot n(B)$,

$n(A \cup B) = 30$ $\Rightarrow$ **$n(A \cap B) = ?$**

Yanıt / The answer is **6**

24. $n(A \cup B) = 44$

$n(A - B) = 2n(B - A) = 3n(A \cap B)$

$\Rightarrow$ **$n(A - B) = ?$**

Yanıt / The answer is **24**

KONU TESTLERİ
SUBJECT TESTS
Test 1

1. $A = \{x \mid |x + 4| < 5,\ \ x \in Z\}$

$B = \{x \mid -1 \leq x < 4,\ \ x \in Z\}$

$\Rightarrow$ **n(A) + n(B) = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

2. $A = \{x \mid |x| < 6,\ \ x \in Z\}$

$B = \{x \mid |x - 1| = 4,\ \ x \in Z\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

3. $n(A \cap B \cap C) = 3 \Rightarrow$

$n(A \cap C) + n(B \cap C) = ?$

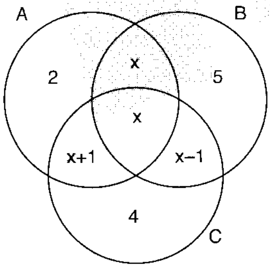
A) 3

B) 6

C) 9

D) 12

E) 15

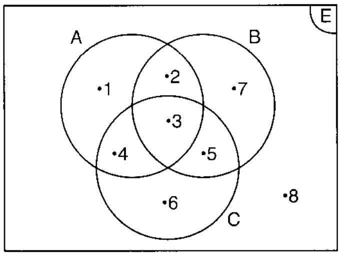


4. **$(A' \cap B) \cup (A \cap B) = ?$**

A) $A \cup B$ B) B C) A′

D) B′ E) ∅

5



$\Rightarrow$ **$B \cap (A' \cup C) = ?$**

A) {1,2} B) {2, 3} C) {3, 5, 7}

D) {4, 6} E) {5, 7}

6. **$[A \setminus (B \cap C)] \cap (A \cap B \cap C) = ?$**

A) $A \cap B \cap C$ B) A C) A′

D) $A \cup B \cup C$ E) ∅

7. $n(A \cup B) = 3 \cdot n(A \cap B) = 2 \cdot n(A \setminus B)$

$n(B \setminus A) = 4$

$\Rightarrow$ **$n(B' \cap A) = ?$**

A) 4 B) 8 C) 12 D) 16 E) 20

8. $n(A) + n(B') = 15$

$n(A') + n(B) = 13$

$\Rightarrow$ **n(E) = ?**

A) 10 B) 11 C) 12 D) 13 E) 14

9. $A = [-5, 7]$

$B = [-6, 8]$

$\Rightarrow A \cap B = ?$

A) $[-5,8]$ B) $[-5,7]$ C) $(-6,8]$ D) $[-5,8)$ E) $[-6,7)$

10. $A \subset B \subset C$,

$n(C \setminus B) = 8$,

$n(A) = 2$

$\Rightarrow \min(n(A \cup B \cup C)) = ?$

A) 8 B) 9 C) 10 D) 11 E) 12

11. $A = \{\, x \mid 0 \leq x \leq 48 ,\ x = 2k ,\ k \in Z \}$

$B = \{\, x \mid -10 \leq x < 30 ,\ x = 3k ,\ k \in Z \}$

$\Rightarrow n(A \cap B) = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

12. $A \cap B \neq \varnothing$,

$n(A) = 10$

$n(B) = 15$

$\Rightarrow \min(n(A \cup B) + \max(n(A \cup B)) = ?$

A) 20 B) 25 C) 29 D) 35 E) 39

13. $3 \cdot n(A \setminus B) = 4 \cdot n(A \cap B) = 8 \cdot (B \setminus A)$

$\Rightarrow \min(n(A \cup B)) = ?$

A) 12 B) 17 C) 24 D) 28 E) 36

14. $n(A \cup B) = 100$

$A = \%60$,

$B = \%70$

$\Rightarrow n(A \cap B) = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

15. $A = [-8, 12]$

$B = [-9, 14]$

$\Rightarrow A' \cap B = ?$

A) $[-9, -8) \cup (12, 14]$ B) $[-8, 14]$ C) $(-9, 12)$ D) $(-\infty, 8)$ E) $(12, \infty)$

16. $A = \{\, x \mid -11 < x < 92 ,\ x = 3k ,\ k \in Z^+ \}$

$B = \{\, x \mid -8 < x < 100 ,\ x = 9k ,\ k \in Z^+ \}$

$\Rightarrow n(A \cap B) = ?$

A) 10 B) 11 C) 12 D) 13 E) 14

Yanıtlar / Answers

1. E	4. B	7. C	10. C	13. B	16. A
2. B	5. C	8. E	11. A	14. C	
3. D	6. E	9. B	12. E	15. A	

1. $n(A) = 1,\ n(B) = 3,\ n(C) = 5$

$\Rightarrow$ **$\min(n(A \cup B \cup C)) = ?$**

A) 1 B) 2 C) 5 D) 8 E) 9

2. $$\left.\begin{array}{l} n(A \setminus B) = 2x - 5 \\ n(A \cap B) = x + 1 \\ n(A' \cap B) = x \end{array}\right\} \Rightarrow \min(n(A \cup B)) = ?$$

A) 7 B) 8 C) 9 D) 10 E) 11

3. $n(A \setminus B) = 12,\ n(A \cap B) = 6$

$n(E) = 38 \Rightarrow$ **$n(A') = ?$**

A) 12 B) 16 C) 20 D) 23 E) 25

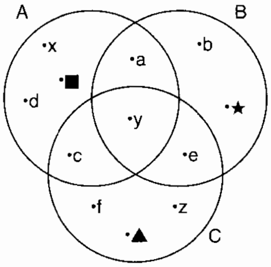
4. $n(A \setminus B) = x^2,\ n(A \cap B) = 1$

$n(B \setminus A) = 2x,\ n(A \cup B) = 16$

$\Rightarrow$ **$x = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

5.



$\Rightarrow$ **$[(A \cup B) \setminus C'] = ?$**

A) {x, ■, d} B) {a, y} C) {a, b, ★}
D) {c, e, y} E) {f, ▲, z}

6. $A = \{ x \mid 10 < x < 100,\quad x = 2k,\ x \in Z\}$

$B = \{ x \mid 20 < x < 120,\quad x = 4k,\ x \in Z\}$

$\Rightarrow$ **$n(A \setminus B) = ?$**

A) 23 B) 25 C) 28 D) 34 E) 35

7. $n(A \cap B) \neq \varnothing,\ A \not\subset B$

$n(A) = 9$

$n(B) = 12$

$\Rightarrow$ **$\min(n(A \cup B)) + \max((n(A \cup B)) = ?$**

A) 30 B) 31 C) 32 D) 33 E) 34

8. **$(A' \cap B) \cup (B \setminus A') = ?$**

A) A B) A′ C) B D) B′ E) A∪B

9. $n(A) + n(B) = 24$

$n(B') + n(A') = 12$

$\Rightarrow$ **$n(E) = ?$**

A) 10 B) 15 C) 17 D) 18 E) 24

10. $n(A) = 2x + 6$

$n(A \cap B) = x + 2$

$n(B' \cap A) = 8$

$n(B \setminus A) = 2 \cdot n(A \setminus B)$

$\Rightarrow$ **$n(A \cup B) = ?$**

A) 8 B) 12 C) 14 D) 16 E) 30

11. $A = \{ (a, b) \mid a \cdot b = 14 ,\ a, b \in N^+\}$

$\Rightarrow$ **$n(A) = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

12. $n(A) = 2 \cdot n(B)$

$n(A \cup B) + n(A \cap B) = 36$

$\Rightarrow$ **$n(B) = ?$**

A) 6 B) 9 C) 12 D) 15 E) 18

13.

$$\left.\begin{array}{l} n(A \cup B) = 44 \\ n(A \cap B) = 6 \\ n(A) = 4 \cdot n(B) \end{array}\right\} \Rightarrow \mathbf{n(B) = ?}$$

A) 6 B) 10 C) 12 D) 16 E) 20

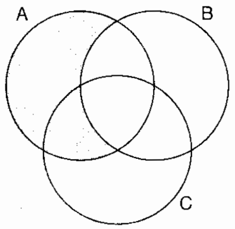
14. $n(A \cup B) - n(A \cap B) = 12$

$n(A) + n(B) = 30$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 6 B) 9 C) 12 D) 15 E) 18

15.



Taralı bölgeler / *The Shaded Regions* = ?

A) $A' \setminus (B \cup C)$ B) $A \cap (B' \cap C)$

C) $(B \cap C) \setminus A$ D) $A \setminus (B \cup C)$

E) $A \setminus B$

16. $A = [-8, 18]$

$B = [-7, 20]$

$\Rightarrow$ **$A \cup B = ?$**

A) $[-8, 20]$ B) $(-8, 18]$ C) $(-7, 20)$

D) $[-7, 18]$ E) $[-7, 20)$

Yanıtlar / Answers

1. C	**4. C**	**7. D**	**10. E**	**13. B**	**16. A**
2. B	**5. D**	**8. C**	**11. D**	**14. B**	
3. C	**6. B**	**9. D**	**12. C**	**15. E**	

1. $A \cup B = \{a, b, c, d\}$,

$A \cup C = \{a, c, d, e\}$,

$\Rightarrow$ **$n(A \cup (B \cap C)) = ?$**

A) 1 B) 2 C) 3

D) 5 E) 7

2. $A \setminus B = \{a, b, c, d\}$,

$A \cap C' = \{a, e, c, f\}$,

$\Rightarrow$ **$A \setminus (B \cap C) = ?$**

A) $\{a, c\}$ B) $\{a, b, c\}$

C) $\{a, b, c, d, e\}$ D) $\{a, b, c, d, e, f\}$

E) $\varnothing$

3. **$(A' \cap B) \cup (A \cap B) = ?$**

A) B B) A C) B′

D) A′ E) $A \cup B$

4. $A = \{x, y, \{x, y\}, \varnothing\}$,

$B = \{x, \varnothing\}$

$\Rightarrow$ **$n(A \setminus B) = ?$**

A) 1 B) 2 C) 3

D) 4 E) 5

5. $A = \{1, 2, 3, 4, 5\}$,

$B = \{2, 3, 4, 6, 8\}$,

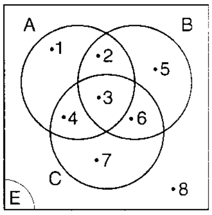
$C = \{0, 3, 5, 7\}$,

$\Rightarrow$ **$(A \cap B) \cup (A \cap C) = ?$**

A) $\{2, 3\}$ B) $\{3, 5\}$ C) $\{4, 5\}$

D) $\{2, 3, 5\}$ E) $\{2, 3, 4, 5\}$

6. **$B' \setminus (A \cap C) = ?$**



A) $\{1,4,7\}$ B) $\{1,7\}$ C) $\{1,3\}$

D) $\{1,6,7\}$ E) $\{1,7,8\}$

7. $A \neq \varnothing$, $B \neq \varnothing$

$n(A \cup B) = 25$,

$n(A - B) = 5$,

$n(A) + n(B) = 29 \Rightarrow$ **$n(B - A) = ?$**

A) 16 B) 15 C) 14

D) 13 E) 11

8. $n(A) + n(B) = 35$,

$n(A) = 18$,

$n(A - B) + n(B - A) = 21$

$\Rightarrow$ **$n(A - B) = ?$**

A) 4 B) 5 C) 6

D) 8 E) 11

9. $n(A\cap B) = 5,$
$n(B) - n(A) = 3,$
$4\cdot n(A) = 3\cdot n(B)$
$\Rightarrow$ **$n(A\cup B) = ?$**

A) 9 B) 14 C) 16
D) 17 E) 18

10. **$[(A'\cap B) \cup B] \cap[(A\cap C)\cup B] = ?$**

A) $C\cup B$ B) $A\cup B$ C) A
D) B E) C

11. $A \subset B \subset C,$
$n(A) = 3,$
$n(B) = 5,$
$n(C) = 9$
$\Rightarrow$ **$n(A\cup B) + n(B\cap C) = ?$**

A) 10 B) 9 C) 8
D) 5 E) 3

12. $n(B) = 11,$
$n(B\setminus A) = 5,$
$n(A\cup B) = 15$
$\Rightarrow$ **$n(A) = ?$**

A) 6 B) 9 C) 10
D) 11 E) 12

13. $n(A\cup B) = 15,$
$n(A) = 2\cdot n(A\setminus B),$
$n(B) = 3\cdot n(B\setminus A)$
$\Rightarrow$ **$n(A\cap B) = ?$**

A) 2 B) 4 C) 6
D) 8 E) 9

14. $A \neq \varnothing$, $B \neq \varnothing$
$n(A - B) = x + 5,$
$n(B) = 2x,$
$n(A\cup B) = 8 \Rightarrow$ **$n(A - B) = ?$**

A) 2 B) 3 C) 4
D) 5 E) 6

15. $A\cup B = E,$
$A = \{2, 3, 4, 5\},$
$B = \{1, 2, 3, 5, 6, 7, 8\}$
$\Rightarrow$ **$n(A' - B') = ?$**

A) 2 B) 3 C) 4
D) 5 E) 6

16. $B \not\subset A,$
$n(A) = 8,$
$n(B) = 4,$
$\min(n(A\cup B)) \Rightarrow$ **$n(A\cap B) = ?$**

A) 1 B) 2 C) 3
D) 4 E) 5

Yanıtlar / Answers

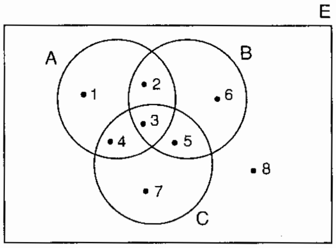
1. C	**4. B**	**7. A**	**10. D**	**13. C**	**16. C**
2. A	**5. E**	**8. E**	**11. A**	**14. E**	
3. A	**6. E**	**9. C**	**12. C**	**15. C**	

1. $A = \{x \mid -3 \le x \le 6,\ x \in N\}$

$B = \{x \mid 1 \le x^2 \le 9, x \in Z\} \Rightarrow$ **n(A) + n(B) = ?**

A) 10 B) 11 C) 12 D) 13 E) 15

2.

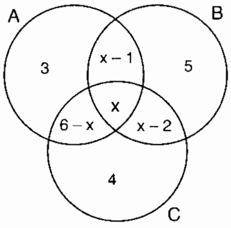


$A \cap (B \cup C)' = ?$

A) {1} B) {1, 2} C) {1, 8}

D) {2, 3, 4} E) {1, 2, 3, 4}

3.



$n(A \cup B \cup C) = 25 \Rightarrow$ **n(A) = ?**

A) 10 B) 12 C) 13 D) 14 E) 15

4. $A = \{x \mid |x - 2| \le 4,\ x \in Z\}$

$B = \{x \mid |x| \le 8, x \in N\} \Rightarrow$ **$n(A \cap B) = ?$**

A) 6 B) 7 C) 8 D) 9 E) 10

5. **$(A \cap B) \cup (A \setminus B) = ?$**

A) A B) B C) A′ D) B′ E) E

6. $n(B) = 3 \cdot n(A)$

$2 \cdot n(B \setminus A) = 7 \cdot n(A \setminus B)$

$\Rightarrow$ **min(n(B)) = ?**

A) 14 B) 15 C) 16 D) 18 E) 21

7. $4 \cdot n(A \setminus B) = 3 \cdot n(A \cap B) = 10 \cdot n(B \setminus A)$

$\Rightarrow$ **$\min(n(A \cup B)) = ?$**

A) 32 B) 34 C) 36 D) 41 E) 48

8. $A = \{x \mid 20 < x < 1200,\ x = 8k,\ k \in N\}$

$B = \{x \mid 25 < x < 1498,\ x = 6k,\ k \in N\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 46 B) 47 C) 48 D) 49 E) 50

9. $A \cup B = E$,

$n(A \cap B') = 12$, $n(A' \cup B') = 23$

$\Rightarrow$ **$n(A') = ?$**

A) 7 B) 8 C) 9 D) 10 E) 11

10. $A \cup B = E$

$\Rightarrow$ **$(A' \cup B') \cup (A \setminus B') = ?$**

A) A B) B C) A′ D) B′ E) E

11. $A = \{x \mid x < 103, x = 3k, k \in N^+\}$

$B = \{x \mid 25 < x < 122, x = 5k, k \in N^+\}$

$\Rightarrow$ **$n(A \cup B) = ?$**

A) 42 B) 46 C) 48 D) 50 E) 53

12. $3 \cdot n(A) = 2 \cdot n(B)$

$n(A \cup B) + n(A \cap B) = 50$

$\Rightarrow$ **$\min(n(B)) = ?$**

A) 16 B) 18 C) 20 D) 24 E) 30

13. $A = (-3, 4]$, $B = [2, 6)$ $\Rightarrow$ **$A \setminus B = ?$**

A) $(-3, 3)$ B) $(-3, 4)$ C) $(-2, 2)$ D) $(-3, 2)$ E) $(-3, 2]$

14. $n(A \cup B) = 120$,

$A = \%60$, $B = \%90$ $\Rightarrow$ **$n(A \cap B) = ?$**

A) 40 B) 50 C) 60 D) 70 E) 80

15. $n(E) = 20$, $A \cup B = \%80$,

$A = \%65$, $B = \%40$ $\Rightarrow$ **$n(B \setminus A) = ?$**

A) 3 B) 4 C) 5 D) 6 E) 8

16. $n(A \setminus B) = 2 \cdot n(B \setminus A)$,

$n(A \cup B) = 24$, $n(A \cap B) = 3$ $\Rightarrow$ **$n(B) = ?$**

A) 6 B) 7 C) 8 D) 9 E) 10

Yanıtlar / Answers

1. D	**4. B**	**7. D**	**10. E**	**13. D**	**16. E**
2. A	**5. A**	**8. C**	**11. C**	**14. C**	
3. C	**6. B**	**9. E**	**12. E**	**15. A**	

1. $A \neq \varnothing$, $B \neq \varnothing$, $A \subset B$

$n(A) + n(B) = 6 \cdot n(B \setminus A) - 1$

$\Rightarrow$ **$\min(n(A \cap B)) = ?$**

A) 2 B) 3 C) 4

D) 5 E) 6

2. $n(A) = 9$, $n(B) = 6$

$\Rightarrow$ **$\max(n(A \cup B)) + \min(n(A \cup B)) = ?$**

A) 22 B) 24 C) 26

D) 28 E) 30

3. $A = \{x : |x - 1| < 3 \text{ , } x \in Z\}$

$\Rightarrow$ **$n(A) = ?$**

A) 2 B) 3 C) 4

D) 5 E) 6

4. $A = \{1, 3, 5, 7, 9\}$

$B = \{x \mid 1 < x < 10,\ x \in Z\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 2 B) 3 C) 4

D) 5 E) 6

5. $n(A \cap B) = 5$,

$n(A \setminus B) + n(B \setminus A) = 64$

$\Rightarrow$ **$n(A \cup B) = ?$**

A) 57 B) 60 C) 63

D) 66 E) 69

6. $n(A) = 9$,

$n(B) = 20$,

$\Rightarrow$ **$n(A \cup B) + n(A \cap B) = ?$**

A) 28 B) 29 C) 30

D) 31 E) 32

7. $A \cap B \neq \varnothing$,

$n(A \setminus B) = 4$, $n(B \setminus A) = 5$

$\Rightarrow$ **$\min((n(A \cup B)) = ?$**

A) 8 B) 9 C) 10

D) 12 E) 14

8. $A \cup B = E$,

$n(A \cup B) = 18$,

$n(A \cap B)' = 16$,

$n(A) = 3 \cdot n(B)$ $\Rightarrow$ **$n(B \setminus A) = ?$**

A) 2 B) 3 C) 4

D) 5 E) 6

9. $A \not\subset B$,

$n(A \cap B) = 4$,

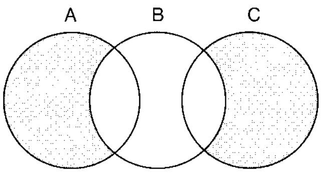
$n(A \cup B) = 12$,

$\Rightarrow$ **$\max(n(B \setminus A)) = ?$**

A) 4 B) 7 C) 9

D) 12 E) 10

10.



Taralı bölgeler / *The Shaded Regions* = ?

A) $(A \cup B) \cap C$ B) $(A \cup C) \setminus B$

C) $(B \setminus A) \cup C$ D) $(B \setminus C) \cap A$

E) $(A \cap C) \setminus B$

11. $A \subset B \subset C$,

$n(A) + n(B) + n(C) = 24$

$\Rightarrow$ **$\max(n(A)) = ?$**

A) 3 B) 4 C) 5

D) 6 E) 8

12. $n(E) = 16$,

$n(A' \cap B) = 6$,

$n(A \cap B) = 3$,

$n(A \cap B') = 5 \Rightarrow$ **$n(A' \cup B) = ?$**

A) 16 B) 8 C) 4

D) 2 E) 11

13. $n(A \cup B) = 26$,

$n(A - B) = 2 \cdot n(B - A)$

$n(A \cap B) = 5$

$\Rightarrow$ **$n(A) = ?$**

A) 14 B) 16 C) 18

D) 19 E) 20

14. $n(E) = 32$,

$n(A') = 16$,

$n(B) = 12$,

$n(A' \cup B') = 30 \Rightarrow$ **$n(A \cup B) = ?$**

A) 26 B) 24 C) 22

D) 20 E) 16

15. $n(A) = 3x + 4$,

$n(B) = 6x - 1$,

$n(A \cap B) = x - 2$,

$4 \cdot (n(A \cap B)) = n(A) \Rightarrow$ **$n(A \cup B) = ?$**

A) 102 B) 101 C) 90

D) 89 E) 88

16. $A \cup B \cup C = E$,

$n(A \cap B) = \varnothing$,

$n(A \cap C) = \varnothing$,

$n(A) = 8$, $n(B) = 11$, $n(C) = 13$,

$n(B - C) + n(C - B) = 12 \Rightarrow$ **$n(E) = ?$**

A) 26 B) 27 C) 28

D) 29 E) 30

Yanıtlar / Answers

1. A	**4. C**	**7. C**	**10. B**	**13. D**	**16. A**
2. B	**5. E**	**8. B**	**11. E**	**14. A**	
3. D	**6. B**	**9. B**	**12. E**	**15. B**	

1. $A = \{1, 2, 3\}$, $A \cup B = \{1, 2, 3, 4, 5\}$,
$A \setminus B = \{1, 2\} \Rightarrow$ **$B = ?$**

A) $\{3, 4\}$ B) $\{4, 5\}$ C) $\{3, 4, 5\}$
D) $\{3, 5\}$ E) $\{1, 2\}$

2. $A = \{x \mid (x + 3)^2 \leq 16, x \in Z\}$
$B = \{x \mid |x - 1| \leq 5, x \in Z\} \Rightarrow$ **$n(B \setminus A) = ?$**

A) 2 B) 3 C) 4 D) 5 E) 6

3. $A \not\subset B$, $B \not\subset A$,
$n(A \cup B) = 15$, $n(A) = 8 \Rightarrow$ **$\max(n(B)) = ?$**

A) 10 B) 11 C) 12 D) 13 E) 14

4. $2 \cdot n(A \setminus B) = 3 \cdot n(A \cap B) = 4 \cdot n(B \setminus A)$
$\Rightarrow$ **$\min(n(A \cup B)) = ?$**

A) 12 B) 13 C) 14 D) 15 E) 16

5. $n(E) = 25$, $n(A \cap B') = 5$,
$n(A' \cap B) = 6$, $n(A \cap B) = 4 \Rightarrow$ **$n(A' \cap B') = ?$**

A) 10 B) 12 C) 13 D) 14 E) 15

6. $n(E) = 17$, $n(A \cap B') = 5$,
$n(A' \cap B') = 4 \Rightarrow$ **$n(B) = ?$**

A) 6 B) 7 C) 8 D) 9 E) 10

7. $A = [2, 4]$, $B = [-4, 3] \Rightarrow$ **$A' \cap B = ?$**

A) $[-4, 2)$ B) $[-4, 2]$ C) $(-4, 2$
D) $(3, 4)$ E) $(3, 4]$

8. $n(A \cup B) = 42$, $n(A \cap B) = 3$
$n(B) = 2 \cdot n(A) \Rightarrow$ **$n(B \setminus A) = ?$**

A) 22 B) 24 C) 25 D) 26 E) 27

9. $n(A \cap B') = 5,\ n(B \setminus A) = 5,$

$n(A \cup B) = 12 \Rightarrow \mathbf{n(A \cap B) = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $B \subset A,\ A - B = \{3, 4\}$

$A = \{1, 2, 3, 4\} \Rightarrow \mathbf{B = ?}$

A) {1} B) {1, 2} C) {1, 2, 3}

D) {1, 3, 4} E) {2, 3, 4}

11. $3 \cdot n(A \setminus B) = 4 \cdot n(A \cap B) = 6 \cdot n(B - A),$

$n(A \cup B) < 87 \Rightarrow \mathbf{max(n(A \cup B)) = ?}$

A) 63 B) 72 C) 81 D) 90 E) 99

12. $A \cup B = E \Rightarrow \mathbf{(A' \cup B')' \cup (A \setminus B) = ?}$

A) A B) B C) $A \cap B$ D) A' E) B'

13. $n(A) + n(B') = 27$

$n(A') + n(B) = 21 \Rightarrow \mathbf{n(E) = ?}$

A) 22 B) 23 C) 24 D) 25 E) 26

14. $A \not\subset B,\ B \not\subset A,$

$n(A \cup B) = 23,\ n(A) = 11,$

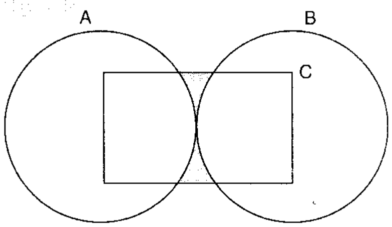
$A \cap B \neq \varnothing \Rightarrow \mathbf{min(n(B)) = ?}$

A) 12 B) 13 C) 14 D) 15 E) 16

15. $n(A) = 13,\ n(B \setminus A) = 5 \Rightarrow \mathbf{n(A \cup B) = ?}$

A) 15 B) 16 C) 17 D) 18 E) 19

16.



Taralı alan / *The shaded area* = ?

A) $C \setminus (A \cup B)$ B) $C \setminus (A \cap B)$

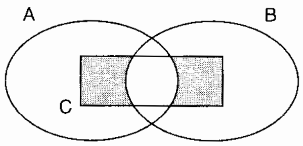
C) $C \cap (A \cup B)$ D) $(A \cap B) \cup C$

E) $(A \cup B) \setminus C$

Yanıtlar / Answers

1. C	**4. B**	**7. A**	**10. B**	**13. C**	**16. A**
2. D	**5. A**	**8. E**	**11. C**	**14. B**	
3. E	**6. C**	**9. B**	**12. A**	**15. D**	

1.



Taralı bölgeler / *The Shaded Regions* = ?

A) $C \setminus A$
B) $(A \cap C) \cup B$
C) $C \setminus (A \cap B)$
D) $(B \cup C) \setminus A$
E) $(A \cup B) \setminus C$

2. $A \cap B \neq \varnothing$,

$n(A) = 8$,

$n(B) = 4$,

$\min(n(A \cup B)) \Rightarrow$ **$n(A \cap B) = ?$**

A) 3
B) 4
C) 5
D) 6
E) 7

3. $n(A) = 2 \cdot n(B)$,

$n(A \cap B) = 4$,

$n(A \cup B) = 11$

$\Rightarrow$ **$n(A - B) = ?$**

A) 2
B) 4
C) 6
D) 8
E) 10

4. $A = \left\{ x \in Z \mid k = \dfrac{3x+5}{x},\ k \in Z \right\}$

$B = \left\{ y \in Z \mid m = \dfrac{2y+3}{y},\ m \in Z \right\}$

$\Rightarrow$ **$n(A \cup B) = ?$**

A) 2
B) 4
C) 6
D) 7
E) 8

5. $A = \{ x \mid 1 \leq x \leq 500,\ x = 4k,\ k \in N \}$,

$B = \{ y \mid 1 \leq y \leq 600,\ y = 6k,\ k \in N \}$,

$\Rightarrow$ **$n(A \cup B) = ?$**

A) 160
B) 163
C) 180
D) 184
E) 190

6. $A = \{ x \mid 1 \leq x \leq 50,\ x \in Z \}$,

$B = \{ y \mid 1 \leq y \leq 50,\ y \in Z \}$,

$\Rightarrow$ **$n(A - B) = ?$**

A) 50
B) 45
C) 30
D) 15
E) 0

7. $A = \{ x \mid 0 < x \leq 10,\ x \in Z^+ \}$,

$B = \{ y \mid y = 2k,\ 0 < k < 10,\ k \in Z^+ \}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 4
B) 5
C) 6
D) 7
E) 8

8. $A = \left\{ x \in Z \mid k = \dfrac{3x+7}{x-1},\ k \in Z \right\}$

$\Rightarrow$ **$n(A) = ?$**

A) 4
B) 5
C) 6
D) 7
E) 8

9. $A = \{ x \mid 1 < x \le 6, \quad x \in N\}$,

$B = \{ y \mid |1 - 2x| \le 9, \ y \in Z\}$,

$\Rightarrow$ **n(A∩B) = ?**

A) 3 B) 4 C) 5 D) 6 E) 7

10. $A = \{ x \mid 8 < x \le 20, \quad x \in N\}$,

$B = \{ x \mid x = 3k, \ 3 \le k \le 6, \ k \in Z\}$,

$\Rightarrow$ **n(A∩B) = ?**

A) 2 B) 3 C) 4 D) 5 E) 6

11. $A = \{ x \mid x = 4k , \ x \le 100, \quad k \in Z^+\}$,

$B = \{ x \mid x = 10k, \ x \le 100, \quad k \in Z^+\}$,

$\Rightarrow$ **n(A∪B) = ?**

A) 10 B) 15 C) 20 D) 25 E) 30

12. $n(A) + n(B') = 20$,

$n(A') + n(B) = 14$

$\Rightarrow$ **n(E) = ?**

A) 7 B) 11 C) 13 D) 17 E) 19

13. $n(A) = 2x - 3$,

$n(B) = 3x + 4$,

$n(A \cup B) = 3x + 7$,

$n(A \cap B) \ne \varnothing$

$\Rightarrow$ **min(x) = ?**

A) 3 B) 4 C) 5 D) 6 E) 7

14. $n(A) = 5 \cdot n(B)$,

$n(A \cup B) + n(A \cap B) = 30$

$\Rightarrow$ **n(A) = ?**

A) 5 B) 10 C) 15 D) 20 E) 25

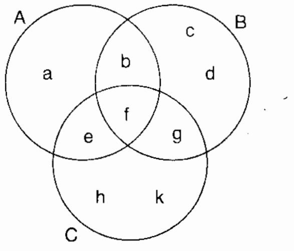
15. $n(A \cap B) = 11$,

$n(A \cup B) = 29$

$\Rightarrow$ **min(n(A)) = ?**

A) 10 B) 11 C) 18 D) 29 E) 40

16.



$A / B = \{x \mid x \in A \wedge x \notin B\}$

$B / C = \{x \mid x \in B \wedge x \notin C\}$

(A / C) ∩ (A / B) = ?

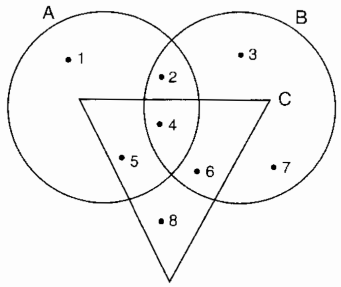
A) f B) b C) e D) a E) g

[YTÜ-1 YÖS 2016]

Yanıtlar / Answers

1. C	**4. C**	**7. B**	**10. C**	**13. B**	**16. D**
2. B	**5. D**	**8. E**	**11. E**	**14. E**	
3. C	**6. E**	**9. B**	**12. D**	**15. B**	

1.



$(\mathbf{A} \cup \mathbf{B}') \cap \mathbf{C} = ?$

A) {4} B) {4, 5} C) {4, 5, 8}

D) {4, 8} E) {4, 5, 6, 8}

2. $n(A' \cup B') = 20$, $n(A \cup B)' = 8$,

$A \cap B \neq \varnothing \Rightarrow$ $\mathbf{min[n(A) + n(B)] = ?}$

A) 8 B) 9 C) 12 D) 13 E) 14

3. $n(A \setminus B) = 35$,

$n(B) = 4 \cdot n(A \cap B)$

$n(A) = 2 \cdot n(B \setminus A) \Rightarrow$ $\mathbf{n(A \cup B) = ?}$

A) 30 B) 42 C) 56 D) 63 E) 68

4. $n(A) = 6$, $n(B \setminus A) = 3$,

$n(A') = 8$, $n(B') = 7 \Rightarrow$ $\mathbf{n(A \cap B) = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

5. $n(A \setminus B) = 3 \cdot n(B) = 6 \cdot n(A \cap B)$,

$n(A \cup B) = 32 \Rightarrow$ $\mathbf{n(B) = ?}$

A) 4 B) 5 C) 6 D) 8 E) 9

6. $(A' \setminus B') \cap (A' \setminus B)$ **= ?**

A) A B) B C) A′ D) B′ E) ∅

7. $n(A') = 15$, $n(B') = 17$,

$n(A) + n(B) = 16 \Rightarrow$ $\mathbf{n(E) = ?}$

A) 24 B) 26 C) 28 D) 30 E) 32

8. $n(A) = 3 \cdot n(B)$, $n(A \cap B) = 6$

$n(A \cup B) = 50 \Rightarrow$ $\mathbf{n(A \setminus B) = ?}$

A) 13 B) 26 C) 32 D) 36 E) 39

9. $A = \{x \mid 21 \le x < 78,\ x = 3k,\ k \in N\}$

$B = \{x \mid 30 < x \le 90,\ x = 5k,\ k \in N\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 2 B) 3 C) 4 D) 5 E) 6

10. $A = \{x \mid 13 \le x \le 75,\ x = 3k,\ k \in N\}$

$B = \{x \mid 24 \le x < 82,\ x = 2k,\ k \in N\}$

$\Rightarrow$ **$n(A \setminus B) = ?$**

A) 12 B) 14 C) 16 D) 18 E) 21

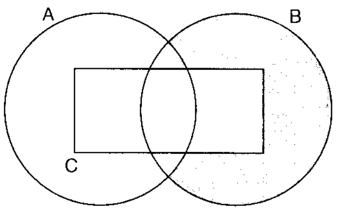
11. $A = \{x \mid 18 \le x < 81,\ x = 3k,\ k \in N\}$

$B = \{x \mid 3 < x \le 60,\ x = 4k,\ k \in N\}$

$\Rightarrow$ **$n(A \cup B) = ?$**

A) 28 B) 30 C) 31 D) 32 E) 36

12.



Taralı bölge / *The Shaded Region* = ?

A) $(A \cup C) \setminus B$
B) $C \setminus (A \cap B)$
C) $B \setminus A$
D) $(A \cap B) \setminus C$
E) $B \setminus (A \cup C)$

13. $A = \{x \mid 32 \le x < 202,\ x = 4k,\ k \in N\}$

$B = \{x \mid 47 < x < 243,\ x = 6k,\ k \in N\}$

$\Rightarrow$ **$n(A \cap B') = ?$**

A) 24 B) 29 C) 30 D) 31 E) 32

14. **$[A' \cap (B \cap A)]' = ?$**

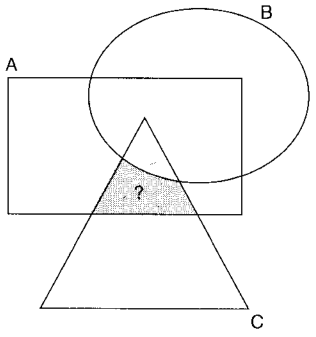
A) $\varnothing$ B) A C) B D) A′ E) E

15. $n(A \cup B) = 17,\ n(A \cap B) = 4,$

$n(B) + 3 = 2 \cdot n(A) \Rightarrow$ **$n(B) = ?$**

A) 9 B) 11 C) 12 D) 13 E) 15

16.



A) $(A \cup B) \setminus C$
B) $(A \cap B) \setminus C$
C) $(A \cap B) \cup C$
D) $C \setminus (A \cap B)$
E) $(A \cap C) \setminus B$

[İSTANBUL ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. C	4. D	7. A	10. A	13. C	16. E
2. E	5. D	8. D	11. D	14. E	
3. D	6. E	9. B	12. E	15. D	

1. **$A = \{3, 4, 5, 6, 7, 8, 9\}$ kümesinin alt kümelerinin kaç tanesinde en az bir tek sayı bulunur?**

How many of the subsets of the set $A = \{3, 4, 5, 6, 7, 8, 9\}$ involve at least one odd number?

A) 20 B) 60 C) 80 D) 100 E)120

2. **$A = \{x: |x - 2| \leq 1\ x \in Z\}$ kümesinin kaç tane özalt kümesi vardır?**

How many proper subsets has the set $A = \{x: |x - 2| \leq 1\ x \in Z\}$?

A) 7 B) 8 C) 15 D) 16 E) 31

3. **3 elemanlı alt kümelerin sayısı 20 olan bir kümenin 4 elemanlı alt küme sayısı kaçtır?**

If the number of subsets which has 3 elements, of a set is 20, what is the number of the subsets which has 4 elements, of that set?

A) 6 B) 9 C) 12 D) 15 E) 18

4. **$A = \{a, b, c, d, e, f\}$ kümesinin 4 elemanlı alt kümelerinin kaç tanesinde c elemanı bulunur?**

How many of the subsets which has 4 elements, of a set $A = \{a, b, c, d, e, f\}$ involves c as a member?

A) 8 B) 10 C) 12 D) 14 E) 16

5. **$n(E) = 16$, $n(A \setminus B) = 8$, $n(A' \cap B') = 3$ ise B kümesinin alt küme sayısı kaçtır?**

If $n(E) = 16$, $n(A \setminus B) = 8$, and $n(A' \cap B') = 3$, what is the number of the subsets of the set B?

A) 8 B) 16 C) 32 D) 64 E) 128

6. **$n(E) = 20$, $n(A') = 8$, $n(A \setminus B) = 7$ ise $A \cap B$ kümesinin özalt küme sayısı kaçtır?**

If $n(E) = 20$, $n(A') = 8$, $n(A \setminus B) = 7$, what is the number of proper subsets of the set $A \cap B$?

A) 7 B) 15 C) 31 D) 63 E) 127

7. **$n(A \setminus B) = 8$, $n(A \cap B) = 5$, $n(A \cup B) = 20$ ise $A' \cap B$ kümesinin 3 elemanlı alt küme sayısı kaçtır?**

If $n(A \setminus B) = 8$, $n(A \cap B) = 5$, and $n(A \cup B) = 20$, what is the number of subsets which has 3 members of the set $A' \cap B$?

A) 21 B) 27 C) 30 D) 35 E) 42

8. $A = \{\, x \mid x \in Z \ \ 10 < x < 25 \}$, $B = \{\, y \mid y \in Z \ \ 1 < y < 20 \}$

$A \cap B$ kümesinin 3 elemanlı alt kümelerinin kaç tanesinde asal sayı bulunmaz?

How many of the subsets which has 3 members, of the set $A \cap B$ do not involve any prime numbers?

A) 5 B) 10 C) 15 D) 20 E) 25

9. **$A\cup B$'nin alt kümelerinin sayısı 256 ve $A\cap B$'nin alt kümelerinin sayısı 32'dir. $n(A\setminus B) = 2$ ise $n(B)$ kaçtır?**

The number of the subsets of the set $A\cup B$ is 256 and the number of the subsets of the set $A\cap B$ is 32.

If $n(A/B) = 2$, then $n(B) = ?$

A) 1 B) 3 C) 4 D) 5 E) 6

10. **$A\cap B = \{a, b, c\}$, $B\cap C = \{c, d, e\}$ ise, $B\setminus(A\cup C)'$ kümesinin özalt küme sayısı kaçtır?**

If $A\cap B = \{a, b, c\}$ and $B\cap C = \{c, d, e\}$, what is the number of the proper subsets of the set $B\setminus(A\cup C)'$?

A) 7 B) 15 C) 31 D) 63 E) 127

11. **$n(A\cap B) = 3$, $n(A') + n(B') = 25$ ve $n(A'\cup B') = 15$ ise $A\cup B$ kümesinin 2 elemanlı kaç alt kümesi vardır?**

If $n(A\cap B) = 3$, $n(A') + n(B') = 25$ and $n(A'\cup B') = 15$ what is the number of the subsets which has 2 members of the set $A\cup B$?

A) 28 B) 32 C) 36 D) 48 E) 52

12. **$A \setminus B$, $B \setminus A$ ve A kümelerinin alt küme sayıları sırasıyla 8, 16, 32 sayılarıyla orantılıdır. Buna göre, $n(A\cup B) = 36$ ise, $n(A\cap B)$ kaçtır?**

The number of the subsets of the sets A / B, B / A and A are proportional to the numbers 8,16,32, respectively.

$n(A\cup B) = 36$, then $n(A\cap B) = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

13. **A kümesinin 2 elemanlı alt kümelerinin sayısı x ve 3 elemanlı alt kümelerinin sayısı y dir. $y = 2x$ olduğuna göre, x kaçtır?**

The number of the subsets which has 2 members of the set A is x and the number of the subsets which has 3 members of the set A is y. If $y = 2x$, then what is the value of x?

A) 8 B) 16 C) 24 D) 28 E) 32

14. **$A = \{x \in Z: |2x - 3| > 5\}$ olduğuna göre, A' kümesinin 3 elemanlı kaç alt kümesi vardır?**

If $A = \{x \in Z: |2x - 3| > 5\}$, what is the number of subsets which has 3 members of the set A'?

A) 16 B) 18 C) 20 D) 24 E) 28

15. **Bir kümenin alt kümelerinin sayısı ile özalt kümelerinin çarpımı 240'tır. Bu kümenin 2 elemanlı alt kümelerinin sayısı kaçtır?**

The product of the subsets of a set and it's proper subsets is 240. What is the number of the subsets which has 2 members of this set?

A) 4 B) 6 C) 8 D) 10 E) 12

16. **$n(A') = 9$, $n(A'\cup B') = 15$ olduğuna göre, $A\setminus B$ kümesinin özalt küme sayısı kaçtır?**

If $n(A') = 9$, $n(A'\cup B') = 15$, what is the number of the proper subsets of A/B?

A) 7 B) 15 C) 31 D) 63 E) 127

Yanıtlar / Answers

1. E	4. B	7. D	10. C	13. D	16. D
2. A	5. C	8. B	11. A	14. C	
3. D	6. C	9. E	12. E	15. B	

Alıştırma / Exercise 1

1. $A = \{-1, 0, 1, 2\}$ ve (and)

$f : A \to B$,

$f(x) = 2x - 4$

$\Rightarrow \mathbf{\sum f(A) = ?}$

Yanıt / The answer is **–12**

---

2. $f(x) = 3x - 1$

$g(x) = x^2 + 2$

$\Rightarrow \mathbf{f(2x + 3) + g(x - 3) = ?}$

Yanıt / The answer is **$x^2 + 19$**

---

3. $f : R \to R$,

$$f(x) = \begin{cases} x^2 - 3, & x < 2 \\ 3x - 2, & x \geq 2 \end{cases}$$

$\Rightarrow \mathbf{f(3) + f(0) = ?}$

Yanıt / The answer is **4**

---

4. $3^{f(x)+1} = x + 3 \Rightarrow \mathbf{f(24) + f(6) = ?}$

Yanıt / The answer is **3**

---

5. $f(2x + 3) = 6x - 1$

$\Rightarrow \mathbf{f(5) + f(1) = ?}$

Yanıt / The answer is **–2**

---

6. $f(2^x + 3) = 4^x + 2^x - 12 \Rightarrow \mathbf{f(5) = ?}$

Yanıt / The answer is **–6**

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7. $\left.\begin{aligned} f(mx+3) &= x+2 \\ f(5) &= 4 \end{aligned}\right\} \Rightarrow$ **f(x) = ?**

Yanıt / The answer is **x – 1**

8. $f(2^x) = 8^x + 5 \Rightarrow$ **f(3) = ?**

Yanıt / The answer is **32**

9. $\left.\begin{aligned} f(2x-a) &= 6x+7 \\ f(2) &= 4 \end{aligned}\right\} \Rightarrow$ **a = ?**

Yanıt / The answer is **–3**

10. $f\left(\dfrac{1-x}{x+1}\right) = \dfrac{x^2-3x+6}{x^2+1} \Rightarrow$ **f(1) = ?**

Yanıt / The answer is **6**

11. $f : R \to R,$

$f(2x-1) + x + 1 = 12x + 6$

$\Rightarrow$ **f(–1) – f(1) = ?**

Yanıt / The answer is **–11**

12. $f : R - \{4\} \to R - \{6\}$

$f(x) = \dfrac{ax-8}{3x-b} \Rightarrow$ **a + b = ?**

Yanıt / The answer is **30**

13. $f: R - \{a\} \to R - \{b\}$

$f(x) = \frac{2x-3}{5x} \Rightarrow \mathbf{a + b = ?}$

Yanıt / The answer is $\mathbf{\frac{2}{5}}$

14. $f(x) = 3x + 6 \Rightarrow \mathbf{f^{-1}(12) = ?}$

Yanıt / The answer is **2**

15. $f: R - \left\{\frac{3}{2}\right\} \to R - \{0\}$

$f(x) = \frac{5}{2x-3} \Rightarrow \mathbf{f^{-1}(x) = ?}$

Yanıt / The answer is $\mathbf{\frac{3x+5}{2x}}$

16. $f: R \to [-4, \infty)$

$f(x) = x^2 - 4 \Rightarrow \mathbf{f^{-1}(x) = ?}$

Yanıt / The answer is $\mathbf{\sqrt{x+4}}$

17. $f(x) = x^2 + 6x + 8 \Rightarrow \mathbf{f^{-1}(x) = ?}$

Yanıt / The answer is $\mathbf{\sqrt{x+1} - 3}$

18. $f(x) = \frac{ax-4}{x+8}$

$f(x) = f^{-1}(x) \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **–8**

19. $f(2^{x+1} - 3x - 1) = x + 1 \Rightarrow \mathbf{f^{-1}(4) = ?}$

Yanıt / The answer is **6**

20. $f : R \rightarrow R$,

$f(3x - 4) = 4x + 2$,

$f^{-1}(2a - 6) = 8$

$\Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **12**

21. $f(x) = ax + b$, $f(2) = -1$,

$f^{-1}(3) = 3 \Rightarrow \mathbf{f^{-1}(7) = ?}$

Yanıt / The answer is **4**

22. $f(x) = ax + b$

$f^{-1}(-5) = 2$

$f^{-1}(2) = 1 \Rightarrow \mathbf{b - a = ?}$

Yanıt / The answer is **16**

23. $f(x) = ax + b$

$f^{-1}(1-x) = 2x + 4$

$\Rightarrow \mathbf{b = ?}$

Yanıt / The answer is **3**

24. $f(x) = 2x - 1$,

$g(x - 1) = 3x - 1$

$\Rightarrow \mathbf{f^{-1}(5) - g^{-1}(8) = ?}$

Yanıt / The answer is **1**

1. $f(5^{3x+1}) = 10 \cdot 5^{3x} + 6 \Rightarrow \mathbf{f^{-1}(2) = ?}$

Yanıt / The answer is **−2**

2. $x = \dfrac{2 - f(x)}{1 - 2f(x)} \Rightarrow \mathbf{f^{-1}(x) = ?}$

Yanıt / The answer is $\mathbf{\dfrac{x-2}{2x-1}}$

3. $f(x) = 2^{2x-3} + 4^{x-1} \Rightarrow \mathbf{f^{-1}(384) = ?}$

Yanıt / The answer is **5**

4. $f(x + 2) = 2f(x) - f(x-2)$,
$f(1) = 4$,
$f(3) = 6 \Rightarrow \mathbf{f(7) = ?}$

Yanıt / The answer is **10**

5. $f(x) = 4^{x+1} \Rightarrow \mathbf{f(-2x) = ?}$

Yanıt / The answer is $\mathbf{\dfrac{64}{f^2(x)}}$

6. $f\left(\dfrac{x-1}{x+1}\right) = \dfrac{x+2}{x+3} \Rightarrow \mathbf{f(x) = ?}$

Yanıt / The answer is $\mathbf{\dfrac{3-x}{4-2x}}$

7. $f(x) = 4 \cdot f(x-3)$,

$f(11) = 36 \Rightarrow \mathbf{f(2) = ?}$

Yanıt / The answer is $\mathbf{\frac{9}{16}}$

8. $f : R \to R$,

$f(x+1) = f(x) + 3$,

$f(3) = 4 \Rightarrow \mathbf{f(7) = ?}$

Yanıt / The answer is **16**

9. $f : R \to R$,

$f(x) = 2x - 1 \Rightarrow \mathbf{f(2x-1) = ?}$

Yanıt / The answer is **4x – 3**

10. $f(x) = 3^{2x} + 1 \Rightarrow \mathbf{f\left(\frac{x}{2}\right) = ?}$

Yanıt / The answer is $\mathbf{\sqrt{f(x)-1} + 1}$

11. $f(x) = 2^{x-1} \Rightarrow \mathbf{f(2x+4) = ?}$

Yanıt / The answer is $\mathbf{32f^2(x)}$

12. $f(x^2 - 2x - 3) = 4x^2 - 8x - 11$

$\Rightarrow \mathbf{f(x) = ?}$

Yanıt / The answer is **4x + 1**

13. $f(x^{-3}+x^{2}+1)=\frac{x^{-3}}{2}+\frac{x^{2}}{2}+2^{-1}+1 \Rightarrow \mathbf{f(5)=?}$

Yanıt / The answer is $\mathbf{\frac{7}{2}}$

14. $f: A-\{a\} \rightarrow B-\{b\}$,

$1+x \cdot f(x)=\frac{2x+5\,f(x)-1}{3} \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is $\mathbf{\frac{7}{3}}$

15. $f: R-\{a\} \rightarrow R-\{b\}$

$x=\frac{4\,f(x)+1}{f(x)-6} \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is **10**

16. $f(\frac{3}{x})=\frac{9+x^{3}}{x^{2}} \Rightarrow \mathbf{f(3x)=?}$

Yanıt / The answer is $\mathbf{9x^{2}+\frac{1}{x}}$

17. $f: R \rightarrow R$,

$f(x)=x+2$,

$g(x)=\begin{cases} x+1, & x \geq 1 \\ x^{2}, & x<1 \end{cases}$

$\Rightarrow \mathbf{(gof)\,(-3)=?}$

Yanıt / The answer is **1**

18. $f(x)=\begin{cases} x^{2}+4x+1, & x \geq 1 \\ 2x+1, & x<1 \end{cases}$

$g(x)=3x+6 \Rightarrow \mathbf{(gof)\,(-1)=?}$

Yanıt / The answer is **3**

19. $f(x)=\begin{cases} ax+4, & x<1 \\ 2x-5, & x\geq 0 \end{cases}$

$(fof)(2)=2 \Rightarrow \mathbf{a=?}$

Yanıt / The answer is **2**

---

20. $f(x)=\begin{cases} \dfrac{1-x}{3}, & x>0 \\ \dfrac{x+3}{2}, & x\leq 0 \end{cases}$

$\Rightarrow \mathbf{(fofof)(1)=?}$

Yanıt / The answer is $\mathbf{-\dfrac{1}{6}}$

---

21. $f(x)=\begin{cases} 4-\dfrac{x}{3}, & x<4 \\ 5x+2, & x\geq 4 \end{cases}$

$\Rightarrow \dfrac{\mathbf{(fof)(-3)}}{\mathbf{f(-15)}}=\mathbf{?}$

Yanıt / The answer is **3**

---

22. $f(x)=\begin{cases} x^2+4x+1, & x\geq 1 \\ 2x+3, & x<0 \end{cases}$

$\Rightarrow \mathbf{(fof)(-1)+f^{-1}(-3)=?}$

Yanıt / The answer is **3**

---

23. $f(x)=\begin{cases} 4+\dfrac{x}{3}, & x<4 \\ 2x-3, & x\geq 4 \end{cases} \Rightarrow \mathbf{(fof)(3)=?}$

Yanıt / The answer is **7**

---

24. $\left.\begin{array}{l} f(x)=x^2+3 \\ g(x)=2x-1 \end{array}\right\} \Rightarrow \mathbf{(fog)(x)=?}$

Yanıt / The answer is $\mathbf{4x^2-4x+4}$

1. $f(x) = 4x - 1$

   $(fog)(x) = 8x + 11$

   $\Rightarrow$ **$g(x) = ?$**

Yanıt / The answer is **$2x + 3$**

2. $\left.\begin{array}{l} f(2x+1) = 4x + 1 \\ g(x) = 3x - 1 \end{array}\right\} \Rightarrow$ **$(fog)(x) = ?$**

Yanıt / The answer is **$6x - 3$**

3. $f : R \to R, \quad g : R \to R$

   $f(x) = 3x - 2,$

   $(g^{-1} of)(x) = \frac{3x+1}{2}$

   $\Rightarrow$ **$g(x) = ?$**

Yanıt / The answer is **$2x - 3$**

4. $f(x) = 4x - 1$

   $(gof)(x) = 8x + 5$

   $\Rightarrow$ **$g(x) = ?$**

Yanıt / The answer is **$2x + 7$**

5. $f: R \to R, \ g: R \to R,$

   $\left.\begin{array}{l} f(x) = 3x+5 \\ (fof)(x) = (gof)(x) \end{array}\right\} \Rightarrow$ **$f(1) + g^{-1}(0) = ?$**

Yanıt / The answer is **$\frac{19}{3}$**

6. $\left.\begin{array}{l} g(x) = 3x-1 \\ (gof)(x) = 2f(x) + x \end{array}\right\} \Rightarrow$ **$f(x) = ?$**

Yanıt / The answer is **$x + 1$**

7. $\left.\begin{array}{l} f(x)=3x-1 \\ (fof^{-1})(16)=2a+4 \end{array}\right\} \Rightarrow \mathbf{f^{-1}(9a+26)=?}$

Yanıt / The answer is **27**

8. $a \neq b,$

$\left.\begin{array}{l} f(x)=x-1 \\ g(x)=x^2-2 \\ (gof)(a)=(gof)(b) \end{array}\right\} \Rightarrow \mathbf{a+b=?}$

Yanıt / The answer is **2**

9. $\left.\begin{array}{l} f(x)=x^2+x+1 \\ (gof)(x)=3x^2+3x+8 \end{array}\right\} \Rightarrow \mathbf{g(4)=?}$

Yanıt / The answer is **17**

10. $(fog)(x)=\dfrac{2f(g(x))+g^2(x)+5}{3} \Rightarrow \mathbf{f(4)=?}$

Yanıt / The answer is **21**

11. $f(3x^4+x^3)=6x^4+2x^3-3,$

$g^{-1}(x)=\dfrac{x+2}{3} \Rightarrow \mathbf{(fog^{-1})^{-1}(1)=?}$

Yanıt / The answer is **4**

12. $\left.\begin{array}{l} (g^{-1}of)(x)=3x-1 \\ f^{-1}(8)=2 \end{array}\right\} \Rightarrow \mathbf{g(5)=?}$

Yanıt / The answer is

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13. $(g^{-1}of)(x) = 3f(x) + 2 \Rightarrow \mathbf{g(5) = ?}$

Yanıt / The answer is **1**

14. $(gof)(x) = \dfrac{3f(x) - 4}{5} \Rightarrow \mathbf{g^{-1}(1) = ?}$

Yanıt / The answer is **3**

15. $\left.\begin{aligned} &(fog)(x) = g(x) + a \\ &f^{-1}(7) = 2 \end{aligned}\right\} \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **5**

16. $f^{-1}\left(\dfrac{x+1}{2}\right) = g(x-2) \Rightarrow \mathbf{(fog)(3) = ?}$

Yanıt / The answer is **3**

17. $\left.\begin{aligned} &f(x) = ax + b \\ &g(x) = bx \\ &f(1) = 3,\ g(-1) = 2 \end{aligned}\right\} \Rightarrow \mathbf{(f^{-1}og)(6) = ?}$

Yanıt / The answer is **−2**

18. $f(x) = x^2 + 3x$

$(fog)(x) = x^2 - 3x \Rightarrow \mathbf{g(x) = ?}$

Yanıt / The answer is **x − 3**

19. $f(x) = 3x - 1$

$g(x) = \dfrac{3x+5}{x+7}$

$(g^{-1} \circ f)(x) = -9 \Rightarrow$ **x = ?**

Yanıt / The answer is **4**

20. $f(x) + f(2x) + f(4x) = 21x - 9$

$\Rightarrow$ **(fof) (2) = ?**

Yanıt / The answer is **6**

21. $f(x) = 2x$,

$(gof)(x) = \dfrac{4x}{3} - 2$

$g(x) = \dfrac{m}{6}x + n - 4 \Rightarrow$ **m·n = ?**

Yanıt / The answer is **8**

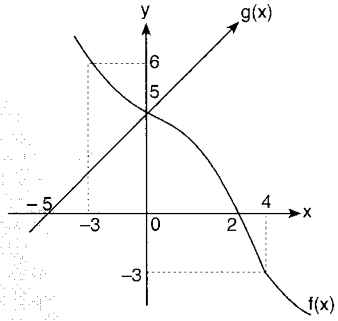
22. $f : IR \rightarrow IR$, $g : IR \rightarrow IR$,

$f(x) = 3x^2 - 2x$,

$(gof)(x) = 6x^2 - 4x + 7 \Rightarrow$ **g(2) = ?**

Yanıt / The answer is **11**

23.



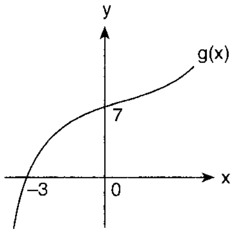
$\Rightarrow$ **$(g^{-1}of)(2) = ?$**

Yanıt / The answer is **–5**

24. $f(x+2) = x^2 + ax + 1$,

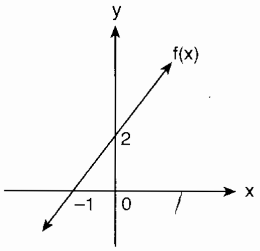
$(g^{-1}of)(4) = 0$

$\Rightarrow$ **a = ?**



Yanıt / The answer is **1**

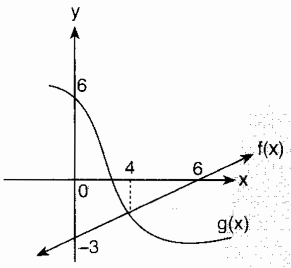
1.



$g(x) = x^2 \cdot f(x) \Rightarrow \mathbf{(gof)(-2) = ?}$

Yanıt / The answer is **−8**

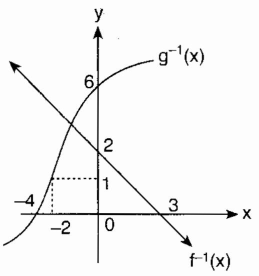
2.


y
6
f(x)
4
6
x
0
g(x)
−3

$\Rightarrow \mathbf{(f^{-1}og)(4) + (gof^{-1})(-3) = ?}$

Yanıt / The answer is **10**

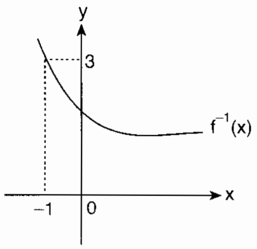
3.


y
$g^{-1}(x)$
6
2
1
−4
3
x
−2
0
$f^{-1}(x)$

$f\,[g^{-1}(x+1)] = -6 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **−1**

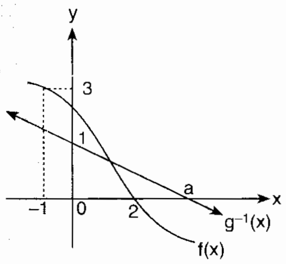
4.



$g(x) = x - 3 \Rightarrow \mathbf{(g^{-1}of)\,(3) = ?}$

Yanıt / The answer is **2**

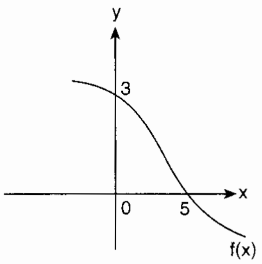
5.


y
3
1
a
x
−1
0
2
$g^{-1}(x)$
f(x)

$\frac{(g^{-1}of)(2)}{(gof^{-1})(3)} = \frac{1}{5} \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **5/2**

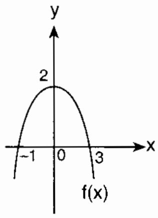
6.

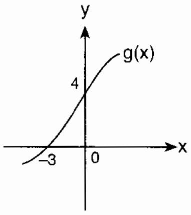


$(fof)(x - 1) = 3 \Rightarrow \mathbf{x = ?}$

Yanıt / The answer is **6**

7.

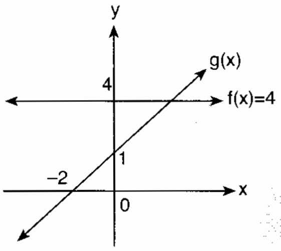




$(gof)(x-2)=4 \Rightarrow \sum x = ?$

Yanıt / The answer is **6**

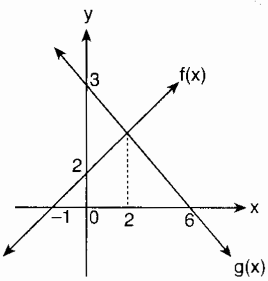
8.



$\Rightarrow (g^{-1}ogof)(6) = ?$

Yanıt / The answer is **4**

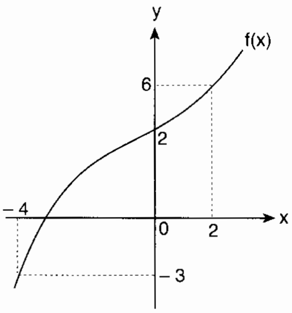
9.



$\Rightarrow (fog^{-1})(1) + (g^{-1}of)(3) = ?$

Yanıt / The answer is **0**

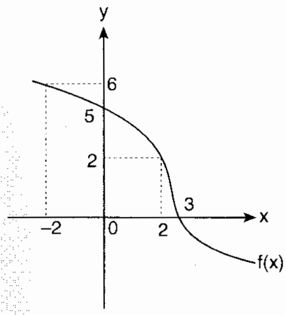
10.



$$\Rightarrow \frac{(fof)(0)}{f^{-1}(-3)} = ?$$

Yanıt / The answer is **–3/2**

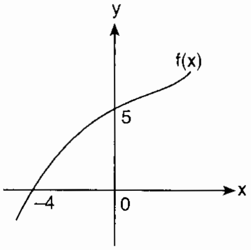
11.



$$\Rightarrow \frac{(fof)(3)+(fof)(2)}{f^{-1}(5)+f^{-1}(6)} = ?$$

Yanıt / The answer is **–7/2**

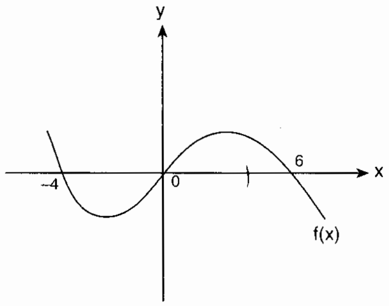
12.



$f^{-1}[f(x-2)] = f(-4) \Rightarrow x = ?$

Yanıt / The answer is **2**

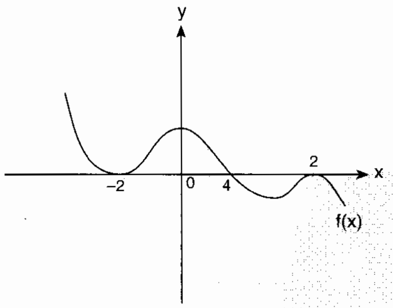
13.



$x \in Z,\ f^{-1}(x) > 0 \Rightarrow \sum x = ?$

Yanıt / The answer is **15**

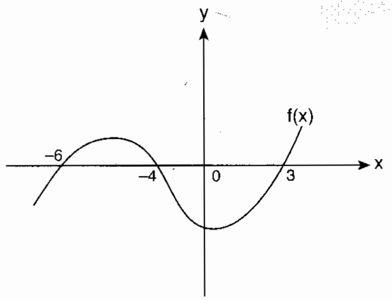
14.



$f(x) \cdot x > 0 \Rightarrow \sum x = ?$

Yanıt / The answer is **6**

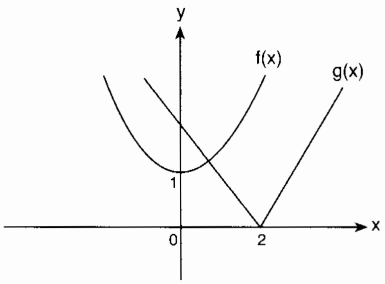
15.



$x \in Z,\ x \cdot f(x) \leq 0 \Rightarrow \sum x = ?$

Yanıt / The answer is **–9**

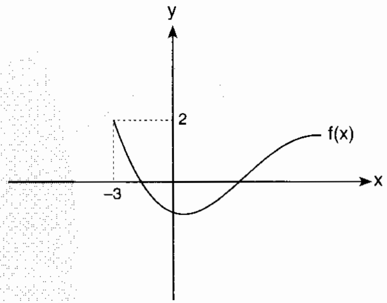
16.



$f(x) \cdot g(x) > 0 \Rightarrow$ **ÇK(SS) = ?**

Yanıt / The answer is **R – {2}**

17.



$A = [a, b),\ f : A \to R \Rightarrow$ **A = ?**

Yanıt / The answer is **[–3, ∞)**

18. $A = \{1, 2, 3, 4, 5\}$

$$f = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 1 & 5 & 4 & 2 \end{pmatrix} \Rightarrow f^{-1} = ?$$

Yanıt / The answer is $\begin{pmatrix} \mathbf{1} & \mathbf{2} & \mathbf{3} & \mathbf{4} & \mathbf{5} \\ \mathbf{2} & \mathbf{5} & \mathbf{1} & \mathbf{4} & \mathbf{3} \end{pmatrix}$

19. $A=\{a, b, c, d, e\}$

$$f=\begin{pmatrix} a & b & c & d & e \\ b & c & d & e & a \end{pmatrix} \Rightarrow \mathbf{f(f(f(a)))=?}$$

Yanıt / The answer is **d**

20. $A=\{1, 2, 3, 4\}$

$$f=\begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 1 & 4 & 2 \end{pmatrix},\ g=\begin{pmatrix} 1 & 2 & 3 & 4 \\ 4 & 1 & 2 & 3 \end{pmatrix}$$

$$\Rightarrow \mathbf{(fog)^{-1}(1)+g^{-1}(f(2))=?}$$

Yanıt / The answer is **5**

21. $A=\{g\ ö, z, d, e\}$

$$f=\begin{pmatrix} g & ö & z & d & e \\ z & ö & d & g & e \end{pmatrix},$$

$$(fog)=\begin{pmatrix} g & ö & z & d & e \\ e & ö & g & z & d \end{pmatrix} \Rightarrow \mathbf{g=?}$$

Yanıt / The answer is $\begin{pmatrix} \mathbf{g} & \mathbf{ö} & \mathbf{z} & \mathbf{d} & \mathbf{e} \\ \mathbf{e} & \mathbf{ö} & \mathbf{d} & \mathbf{g} & \mathbf{z} \end{pmatrix}$

22. $A=\{1, 2, 3, 4\}$

$$f=\begin{pmatrix} 1 & 2 & 3 & 4 \\ 4 & 3 & 1 & 2 \end{pmatrix},\ g=\begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 4 & 2 & 1 \end{pmatrix}$$

$$\Rightarrow \mathbf{(fog^{-1})=?}$$

Yanıt / The answer is $\begin{pmatrix} \mathbf{1} & \mathbf{2} & \mathbf{3} & \mathbf{4} \\ \mathbf{2} & \mathbf{1} & \mathbf{4} & \mathbf{3} \end{pmatrix}$

23. $A=\{a, b, c, d, e\}$

$$f=\begin{pmatrix} a & b & c & d & e \\ c & d & b & e & a \end{pmatrix} \Rightarrow \mathbf{(f^{-1}o\ f^{-1}o\ f^{-1})(b)=?}$$

Yanıt / The answer is **e**

24. $A=\{1, 2, 3, 4, 5\}$,

$$f=\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 5 & 3 & 4 & 2 & 1 \end{pmatrix},$$

$$g=\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 4 & 2 & 1 & 5 \end{pmatrix} \Rightarrow \mathbf{(fog)^{-1}=?}$$

Yanıt / The answer is $\begin{pmatrix} \mathbf{1} & \mathbf{2} & \mathbf{3} & \mathbf{4} & \mathbf{5} \\ \mathbf{5} & \mathbf{2} & \mathbf{3} & \mathbf{1} & \mathbf{4} \end{pmatrix}$

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $A = \{-1, 0\ 1\}$

$f: A \to B$

$f(x) = -x - 1$

$\Rightarrow$ **$B = ?$**

A) $\{-2, -1, 0\}$
B) $\{-1, 0, 1\}$
C) $\{0, 1, 2\}$
D) $\{-3, -2, 1\}$
E) $\{-2, 0, 1\}$

2. $f(x) = x^2 + x - 1$

$g(x) = x^2 - x + 1$

$\Rightarrow$ **$f(1) + g(-1) = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

3. $f(x) = \begin{cases} -x+1 & x<0 \\ x-1 & x>0 \end{cases} \Rightarrow \mathbf{f(-2)+f(3) = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

4. $f: R^+ \to R$

$f(x - 1) = x^2 - 2x + 2$

$f(a) = 10 \Rightarrow$ **$a = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

5. $f(x) = 6x^2 - ax + 4$

$f(2) = 0 \Rightarrow$ **$f(-1) = ?$**

A) 12 B) 16 C) 20 D) 24 E) 28

6. $f: R^+ \to R$

$f(x^2 + 1) = 8x - 7$

$\Rightarrow$ **$f(10) = ?$**

A) 11 B) 13 C) 15 D) 17 E) 19

7. $f(5x + 1) = 2x^2 + 3x + a$

$f(1) = 2 \Rightarrow$ **$f(6) = ?$**

A) 3 B) 5 C) 7 D) 9 E) 11

8. $f^2(x + 1) = x^3 + 3x^2 + 3x + 1$

$\Rightarrow$ **$f(4) = ?$**

A) 2 B) 4 C) 8 D) 16 E) 32

9. $f(x) = 2^{x+3} \Rightarrow \mathbf{f(x + 1) = ?}$

A) $f(x)$ B) $f(x) - 2$ C) $f^2(x)$

D) $2f(x)$ E) $\frac{f(x)}{2}$

10. $f(x) = 2x - 4 \Rightarrow \mathbf{f(x + 1) = ?}$

A) $2 - f(x)$ B) $f(x) + 2$ C) $2f(x) - 1$

D) $2f(x) + 2$ E) $3f(x) - 3$

11. $f(x) = \frac{f(x+1)\cdot 3}{x}$, $f(4) = 12 \Rightarrow \mathbf{f(1) = ?}$

A) 28 B) 30 C) 42 D) 50 E) 54

12. $f(x + 1) = f(x) + 2$

$f(1) = 2 \Rightarrow \mathbf{f(10) = ?}$

A) 10 B) 12 C) 14 D) 18 E) 20

13. $x\cdot f(x - 2) = 2x^2 - 3x + 2a + 8$

$\Rightarrow \mathbf{f(-1) = ?}$

A) -2 B) -1 C) 0 D) 1 E) 2

14. $(\sqrt[3]{14x-1})\cdot f(x) = 3^{x+2} \Rightarrow \mathbf{f(2) = ?}$

A) 3 B) 9 C) 18 D) 27 E) 81

15. $f(x) = 2^x$,

$f(x) - f(x - 1) = 32 \Rightarrow \mathbf{x = ?}$

A) 2 B) 3 C) 4 D) 5 E) 6

16. $f(x) = x$

$f(x) = (a - 1)x^4 + (b + 4)x^3 + (2 - c)x^2 + x + d - 5$

$\Rightarrow \mathbf{a + b + c + d = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

Yanıtlar / Answers

1. A	4. C	7. C	10. B	13. B	16. D
2. D	5. D	8. C	11. E	14. D	
3. E	6. D	9. D	12. E	15. E	

1. $f(x^2 + 1) = 2x^2 + 2$

$\Rightarrow$ **$f(1) + f(2) + \ldots + f(11) = ?$**

A) 128 B) 129 C) 132 D) 135 E) 138

2. $f : R - \{2\} \rightarrow R - \{1\}$

$f(x) = \dfrac{x-1}{x-2}$

$\Rightarrow$ **$f(4) \cdot f(5) \cdot f(6) \cdot \ldots \cdot f(18) = ?$**

A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $\frac{9}{2}$ D) $\frac{15}{2}$ E) $\frac{17}{2}$

3. $f(x) + f(2x + 1) = 6x + 10$

$\Rightarrow$ **$f(4) = ?$**

A) 8 B) 12 C) 14 D) 17 E) 21

4. $f(x) = ax + b$

$f(2) = 12,$

$f(-1) = 6$

$\Rightarrow$ **$f(0) = ?$**

A) 2 B) 4 C) 6 D) 8 E) 10

5. $f(x) + f(-2x) = -6x - 12$

$\Rightarrow$ **$f(1) = ?$**

A) −2 B) −1 C) 0 D) 1 E) 2

6. $(4x - 8) \cdot f(3x + 5) + f(3x - 5) = x^3 + x^2$

$\Rightarrow$ **$f(1) = ?$**

A) 12 B) 14 C) 16 D) 18 E) 20

7. $f(x) - 2f(-x) = -x^2$

$\Rightarrow$ **$f(2) = ?$**

A) −4 B) −2 C) 2 D) 4 E) 8

8. $2f(x) - f(\frac{1}{x}) = 8x \Rightarrow$ **$f(-2) = ?$**

A) −12 B) −4 C) $-\frac{1}{2}$ D) $-\frac{1}{4}$ E) $-\frac{1}{8}$

9. $f(3x^2 - 4x + 1) = 6x^2 - 8x + 3 \Rightarrow$ **f(6) = ?**

A) 5 B) 6 C) 9 D) 12 E) 13

10. $f(x) = c \quad (c \in R)$

$$f(x) = \frac{(a-2b)x^2 + (b-1)x + 9}{4x-3} \Rightarrow \mathbf{a = ?}$$

A) –25 B) –22 C) –18 D) –15 E) –10

11. $x = \dfrac{3-2f(x)}{f(x)+4} \Rightarrow$ **f(x) = ?**

A) $\dfrac{3-4x}{x+2}$ B) $\dfrac{4x-6}{2x+3}$ C) $\dfrac{6-5x}{x+2}$

D) $\dfrac{4x-3}{x+2}$ E) $\dfrac{3-4x}{x-2}$

12. $f(5^x) = 125^x - 5^{-2x} - 5^{2x} \Rightarrow$ **f(3) = ?**

A) $\dfrac{160}{3}$ B) $\dfrac{111}{9}$ C) $\dfrac{160}{9}$

D) $\dfrac{161}{9}$ E) $\dfrac{163}{3}$

13. $f(a \cdot b) = f(a) + f(b)$,

$f(3) = 4 \Rightarrow$ **f(27) = ?**

A) 4 B) 8 C) 12 D) 16 E) 20

14. $f(x) = x^2 + 1$,

$g(x) = 8 - 2x$

$\Rightarrow$ **(2f(x) + g(x)) (3) = ?**

A) 20 B) 21 C) 22 D) 23 E) 24

15. $f(2x + 1) + f(x + 2) + f(3x) = x^2 + 2x - 4$

$\Rightarrow$ **f(0) + f(1) + f(2) + f(3) = ?**

A) –4 B) $-\dfrac{13}{3}$ C) –5 D) $-\dfrac{16}{3}$ E) $-\dfrac{19}{3}$

16. $f(x) = \dfrac{5x-1}{4}$, $f(a) + f(b) = \dfrac{9}{2} \Rightarrow \mathbf{a + b = ?}$

A) $\dfrac{1}{4}$ B) $\dfrac{1}{2}$ C) 1 D) 2 E) 4

Yanıtlar / Answers

1. C	**4. D**	**7. D**	**10. B**	**13. C**	**16. E**
2. E	**5. C**	**8. A**	**11. A**	**14. C**	
3. B	**6. A**	**9. E**	**12. D**	**15. B**	

1. $A = \{-2, 1, 2\}$,

$B = \{-3, -2, -1, 1, 2, 3\}$,

$f : A \to B,\ f(x) = x^2 - 3 \Rightarrow$ **f = ?**

A) $\{(-2, 1), (1, -2), (2, 1)\}$

B) $\{(-2, 1), (1, -2)\}$

C) $\{(1, 2), (2, 1), (-2, 1)\}$

D) $\{(-2, -2), (1, 1), (2, 2)\}$

E) $\{(2, 2), (1, 1), (-2, -2)\}$

2. $$f(x) = \begin{cases} x - 2 & x < -3 \\ x^2 + 3, & -3 < x < 4 \\ 2x + 1, & 4 \le x \end{cases}$$

$\mathbf{f(-4) - f(5) + f(2) = ?}$

A) −17 B) −10 C) −7 D) 7 E) 10

3. $f(x) = 3x - 4,\ g(x) = x + 1$,

$2\cdot f(x) - 4\cdot g(x) = 2 \Rightarrow$ **x = ?**

A) 3 B) 4 C) 5 D) 7 E) 9

4. $f(x) = x$

$f(x) = (a - 2)x^2 - (2b - 7)x + c - 3 \Rightarrow$ $\mathbf{a\cdot b\cdot c = ?}$

A) 18 B) 20 C) 24 D) 28 E) 32

5. $f(x) = 5x - 6,\ g(x) = 2x + 6$,

$f(2m) = g(3m) \Rightarrow$ **m = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

6. $$f(x) = \begin{cases} x - 4 & x < 3 \\ x + 4 & x \ge 3 \end{cases} \qquad g(x) = \begin{cases} \dfrac{2}{x} & x > 2 \\ -3 & x \le 2 \end{cases}$$

$$\Rightarrow \frac{\mathbf{f(-2) + g(0)}}{\mathbf{f(4) - g(4)}} = \mathbf{?}$$

A) $-\frac{6}{5}$ B) $-\frac{3}{5}$ C) $-\frac{2}{15}$ D) $\frac{3}{5}$ E) $\frac{6}{5}$

7. $$f\left(\frac{x-1}{3x+2}\right) = \frac{3x+2}{1-x} \Rightarrow \mathbf{f\left(\frac{1}{9}\right) = ?}$$

A) −11 B) −9 C) 9 D) 11 E) 13

8. $f(x) = 3(x^2 + 1) + x(x^2 + 3)$

$\mathbf{f(\sqrt[3]{5} - 1) = ?}$

A) 7 B) 12 C) 17 D) 27 E) 52

9. $f(x) = 2x^2 + ax - 3$,

$f(-1) = 3 \Rightarrow \mathbf{f(3) = ?}$

A) 1 B) 2 C) 3 D) 4 E) 5

10. $f(3x - 7) = 2x^3 + 3x \Rightarrow \mathbf{f(2) = ?}$

A) 48 B) 52 C) 56 D) 63 E) 65

11. $f(x) = 3 \cdot 2^x + 2 \cdot 3^x \Rightarrow \mathbf{f(2) = ?}$

A) 15 B) 18 C) 24 D) 28 E) 30

12. $f(x) = 2x - 5 \Rightarrow \mathbf{f(3x + 1) = ?}$

A) $3f(x) + 10$ B) $2f(x) + 12$ C) $3f(x) + 12$

D) $2f(x) + 10$ E) $3f(x) + 18$

13. $f(x) = 3^{2x-1} \Rightarrow \dfrac{\mathbf{f(3x)}}{\mathbf{f(3x+1)}} = \mathbf{?}$

A) $\frac{1}{9}$ B) $\frac{1}{3}$ C) 0 D) 3 E) 9

14. $f(x) = \frac{x}{3} \cdot f(x+1),\ f(5) = \frac{3}{2} \Rightarrow f(3) = \mathbf{?}$

A) 1 B) 2 C) 3 D) 4 E) 5

15. $f(x + 1) = 2f(x) + 4$,

$f(5) = 44 \Rightarrow \mathbf{f(2) = ?}$

A) -2 B) -1 C) 0 D) 1 E) 2

16. $f(x + 2) = (x + 2) \cdot f(x + 1)$,

$f(2) = 4 \Rightarrow \mathbf{f(10) = ?}$

A) 10! B) $2 \cdot 10!$ C) $4 \cdot 10!$

D) 20! E) 24!

Yanıtlar / Answers

1. A	**4. A**	**7. B**	**10. D**	**13. A**	**16. B**
2. B	**5. C**	**8. A**	**11. E**	**14. B**	
3. D	**6. A**	**9. C**	**12. C**	**15. E**	

1. $f : A \to B,$

$A = \{0, 1, 2, 3\}$

$f(x) = 3x - 6 \Rightarrow$ **$B = ?$**

A) $\{-3, -2, -1, 0\}$
B) $\{-6, -3, 0, 3\}$
C) $\{-6, -3, 3, 6\}$
D) $\{-3, 0, 3, 6\}$
E) $\{0, 1, 2, 3\}$

2. $f(x) = x^3 - x^2 + x + 1 \Rightarrow$ **$f(2) = ?$**

A) 5 B) 6 C) 7 D) 8 E) 9

3. $f(x) = (2x - 3)\cdot(3x + 1)$

$\Rightarrow$ **$f(1) + f(2) - f(3) = ?$**

A) –21 B) –24 C) –27 D) –30 E) –33

4. $f(x) = \begin{cases} x^2 + 3 & x > 0 \\ x - 1 & x \leq 0 \end{cases}$

$f(3) + f(-1) + f(2) = ?$

A) 5 B) 7 C) 11 D) 13 E) 17

5. $f(x) = x^2 + ax + 12,$

$f(4) = 40 \Rightarrow$ **$a = ?$**

A) 1 B) 3 C) 5 D) 7 E) 9

6. $\left.\begin{array}{l} f(x) = 6x + 1 \\ g(x) = x^2 + 4 \end{array}\right\} \Rightarrow$ **$f(2) + g(3) = ?$**

A) 13 B) 16 C) 19 D) 23 E) 26

7. $f(x) = 4x - 5 \Rightarrow$ **$f(x + 3) = ?$**

A) $4x + 1$
B) $4x + 4$
C) $4x + 7$
D) $4x + 12$
E) $4x + 16$

8. $f(x) = 2x^2 + 4 \Rightarrow$ **$f(x + 3) = ?$**

A) $2x^2 + 12x + 22$
B) $x^2 + 6x + 13$
C) $x^2 + 12x + 22$
D) $2x^2 + 6x + 9$
E) $2x^2 + 6x + 13$

9. $f(5x-2) = 9x + 13 \Rightarrow \mathbf{f(8) = ?}$

A) 23 B) 25 C) 27 D) 29 E) 31

10. $f(2^x - 2) = 7x - 5 \Rightarrow \mathbf{f(14) = ?}$

A) 21 B) 22 C) 23 D) 24 E) 25

11. $f(3^x) = 4 \cdot 3^x + 12 \Rightarrow \mathbf{f(x) = ?}$

A) $4x + 3$ B) $4x + 12$ C) $4x + 15$

D) $3x - 9$ E) $3x - 12$

12. $f(x-1) = x^3 - 3x^2 + 3x - 1 \Rightarrow \mathbf{f\left(\sqrt[6]{3}\right) = ?}$

A) $\sqrt[3]{3}$ B) $\sqrt{3}$ C) 1 D) 3 E) 6

13. $f(2^n) = 16 - f(2^{n-1})$

$f(1) = 2 \Rightarrow \mathbf{f(16) = ?}$

A) 2 B) 4 C) 8 D) 16 E) 32

14. $f(x) = f(x+1) - 2,$

$f(0) = 3 \Rightarrow \mathbf{f(9) = ?}$

A) 23 B) 21 C) 18 D) 9 E) 3

15. $f(x) = ax + b,$

$\left.\begin{array}{l} f(2) = 1 \\ f(3) = 4 \end{array}\right\} \Rightarrow \mathbf{f(4) = ?}$

A) 7 B) 9 C) 10 D) 12 E) 14

16. $f: R \rightarrow R,$

$f(x-1) + f(x+1) = 8x - 18$

$\Rightarrow \mathbf{f(3) = ?}$

A) 7 B) 3 C) 0 D) –3 E) –6

Yanıtlar / Answers

1. B	4. E	7. C	10. C	13. A	16. B
2. C	5. B	8. A	11. B	14. B	
3. C	6. E	9. E	12. B	15. A	

1. $f(x) = 5x^2 - 3x + 4 \Rightarrow$ **$f(-1) + f(1) = ?$**

A) 16 B) 18 C) 20 D) 22 E) 24

2. $f(x) = \begin{cases} 2x - 3 & x < -2 \\ \sqrt{4 - x^2}, & -2 \le x < 1 \\ x - 2, & 1 \le x \end{cases}$

$f(-3) + f(0) + f(5) = ?$

A) –4 B) –2 C) 0 D) 2 E) 4

3. $f(x + 5) = x + 5 \Rightarrow$

$f(1) + f(2) + f(3) + \ldots + f(29) = ?$

A) 305 B) 335 C) 385 D) 405 E) 435

4. $f: R - \{1\} \to R - \{1\},\ f(x) = 1 + \dfrac{1}{x - 1}$

$\Rightarrow$ **$f(3) \cdot f(4) \cdot f(5) \cdot \ldots \cdot f(16) = ?$**

A) 6 B) 8 C) 10 D) 14 E) 16

5. $f = \{(-2, 3), (2, -1), (3, 1), (5, 4)\}$

$g = \{(3, 5), (-2, 4), (4, 3), (1, 2)\}$

$\Rightarrow$ **$f + g = ?$**

A) $\{(7, 4), (6, 6)\}$ B) $\{(-2, 7), (3, 6)\}$

C) $\{(-4, 7), (6, 6)\}$ D) $\{(1, 8), (0, 3), (7, 4), (6, 6)\}$

E) $\varnothing$

6. $f(x) = 3x - 1 \Rightarrow$ **$f(2x) = ?$**

A) $f(x) + 1$ B) $2f(x) + 1$ C) $3f(x) + 1$

D) $3f(x) + 2$ E) $6f(x) + 1$

7. $f(x) = 2^{x-3} \Rightarrow$ **$f(3x) = ?$**

A) $4 \cdot f^3(x)$ B) $8 \cdot f^3(x)$ C) $16 \cdot f^3(x)$

D) $32 \cdot f^3(x)$ E) $64 \cdot f^3(x)$

8. $f(x) = R - \{-1\} \to R - \{1\}$

$f(x) = \dfrac{x}{x + 1} \Rightarrow$ **$f(2x - 1) = ?$**

A) $\dfrac{f(x) - 1}{2f(x)}$ B) $\dfrac{2f(x) - 1}{f(x)}$ C) $\dfrac{2f(x) - 1}{2f(x)}$

D) $\dfrac{3f(x) - 1}{f(x)}$ E) $\dfrac{3f(x) - 1}{2f(x)}$

9. $f(x+y)=f(x)\cdot f(y)$,

$f(2)=4 \Rightarrow$ **$f(4)=?$**

A) 8 B) 16 C) 24 D) 32 E) 64

10. $f(4x+2)=6x-7 \Rightarrow$ **$f(0)=?$**

A) –6 B) –8 C) –10 D) –12 E) –14

11. $f(x)=ax+b$,

$f(2)=4,\ f(3)=9 \Rightarrow$ **$f(-2)=?$**

A) –10 B) –12 C) –16 D) –18 E) –20

12. $f(x)+f(2x)=6x-4 \Rightarrow$ **$f(3)=?$**

A) 1 B) 2 C) 3 D) 4 E) 5

13. $x \in \mathbb{R}$,

$f(2x^2-3x)=4x^2-6x+7 \Rightarrow$ **$f(5)=?$**

A) 17 B) 19 C) 24 D) 26 E) 28

14. $f(x)=ax+b,\ f(-1)=1$

$f(2)=7 \Rightarrow$ **$f(-2)=?$**

A) –2 B) –1 C) 0 D) 1 E) 2

15. $f(x)=x+3$,

$g(x)=3x-2 \Rightarrow$ **$(2f+g)(5)=?$**

A) 20 B) 23 C) 24 D) 26 E) 29

16. $(3x-6)\cdot f(3x+1)+f(3x-1)=x^2+5 \Rightarrow$ **$f(5)=?$**

A) 5 B) 6 C) 8 D) 9 E) 10

Yanıtlar / Answers

1. B	**4. B**	**7. E**	**10. C**	**13. A**	**16. D**
2. A	**5. B**	**8. E**	**11. C**	**14. B**	
3. E	**6. B**	**9. B**	**12. D**	**15. E**	

1. $f(x) = ax + b$,
$f(-1) = 1$,
$f(1) = 3 \Rightarrow$ **$f(4) = ?$**

A) 3 B) 4 C) 5
D) 6 E) 7

2. $a \in Z^+$,
$f(x) = ax + b$,
$(fof)(x) = 9x - 20$
$\Rightarrow$ **$f(-2) = ?$**

A) –11 B) 8 C) 3
D) –6 E) –12

3. $f\left(\dfrac{x}{2} - 1\right) = x^2 - 2x + a$,
$f(-2) = 0 \Rightarrow$ **$a = ?$**

A) –1 B) –2 C) –4
D) –6 E) –8

4. $f(x) = ax$,
$f(x) - f(-x) = -4x$
$\Rightarrow$ **$f(x - 1) = ?$**

A) $2x$ B) $2x + 1$ C) $2x + 3$
D) $-2x + 2$ E) $2x - 1$

5. $f: R \to R$,
$y = f(x) = -3x + 4$,
$\Rightarrow$ **$f([-2, 3)) = ?$**

A) $(-5, 10]$ B) $(3, 8]$ C) $(4, 7]$
D) $[-5, 10)$ E) $[-5, 9)$

6. $f(x) = x^3 - 3x^2 + 3x - 1$
$\Rightarrow$ **$f(4) = ?$**

A) 6 B) 12 C) 16
D) 20 E) 27

7. $f(x, y) = \min(2x, 3y)$,
$g(x, y) = \max(5x, 6y)$
$\Rightarrow$ **$f(4, 3) + g(2, 3) = ?$**

A) 20 B) 22 C) 24
D) 26 E) 28

8. $f(x - 1) = x^2 - 2x + 4$
$\Rightarrow$ **$f(x + 1) = ?$**

A) $x^2 + 2x + 4$ B) $x^2 - 2x + 7$
C) $x^2 + 2x + 1$ D) $x^2 + 2x - 7$
E) $x^2 - 2x - 4$

9. $f(3x-2) = 2x-3 \Rightarrow \mathbf{f(x) = ?}$

A) $\frac{2x-5}{3}$ B) $\frac{2x+5}{3}$ C) $\frac{3x+5}{3}$

D) $\frac{3x-2}{3}$ E) $\frac{2x-2}{3}$

10. $f(x) = 1 - \frac{1}{x} \Rightarrow \mathbf{f(3x) = ?}$

A) $\frac{4f(x)-1}{3}$ B) $\frac{f(x)}{3}$ C) $\frac{f(x)-2}{3}$

D) $\frac{f(x)+2}{3}$ E) $\frac{3f(x)-1}{3}$

11. $f(2x-3) = \frac{3x+m}{x-1}$,

$f^{-1}(3) = 1 \Rightarrow \mathbf{m = ?}$

A) –2 B) –3 C) –4

D) –5 E) –6

12. $f: R \rightarrow R$,

$f(x) = \frac{2^x - 2^{-x}}{2^x + 2^{-x}}$, $f^{-1}(a) = 1 \Rightarrow \mathbf{a = ?}$

A) $\frac{3}{5}$ B) $\frac{2}{5}$ C) $\frac{1}{5}$

D) $-\frac{1}{5}$ E) $-\frac{2}{5}$

13. $x = \frac{f(x)}{2 \cdot f(x)+5} \Rightarrow \mathbf{f^{-1}(3) = ?}$

A) $\frac{1}{3}$ B) $\frac{3}{10}$ C) $\frac{3}{11}$

D) $\frac{1}{4}$ E) $\frac{3}{13}$

14. $f(x) = \frac{ax-1}{x-2}$, $f(x) = f^{-1}(x) \Rightarrow \mathbf{a = ?}$

A) –3 B) –2 C) 0

D) 2 E) 3

15. $f(x) = 2x + 5 \Rightarrow \mathbf{f(2x + 1) = ?}$

A) $f(x) + 2$ B) $2 \cdot f(x) - 1$

C) $2 \cdot f(x) + 1$ D) $f(x) + 1$

E) $2 \cdot f(x) - 3$

16. $f(2) = 3$,

$f(x + 2) + x = f(x + 1) + x^2 + 1$

$\Rightarrow \mathbf{f(4) = ?}$

A) 2 B) 3 C) 4

D) 7 E) 9

Yanıtlar / Answers

1. D	**4. D**	**7. D**	**10. D**	**13. C**	**16. D**
2. A	**5. A**	**8. A**	**11. B**	**14. D**	
3. E	**6. E**	**9. A**	**12. A**	**15. E**	

1. $f(x) = 3^{x-1}$

$\Rightarrow \mathbf{f(x+1) - f(x+2) - 3 \cdot f(x) = ?}$

A) 3^x B) 3^2 C) -3^x

D) -3^{x+1} E) 1

2. $f(x) = f(x-1) + x$,

$f(1) = 1 \Rightarrow \mathbf{f(10) = ?}$

A) 40 B) 45 C) 50

D) 55 E) 60

3. $f(x-1) + f(x+1) = 2x^2 + 6$

$\Rightarrow \mathbf{f(x) = ?}$

A) $x^2 + x + 1$ B) $x^2 - 1$ C) $x^2 + 1$

D) $x^2 + 2$ E) $x^2 + 2x$

4. $(f \cdot g)(x) = x^3 - 5x^2 + 3$,

$f(x) = x^2 - 2 \Rightarrow \mathbf{g(1) = ?}$

A) $-\frac{4}{3}$ B) -1 C) 0

D) $\frac{4}{5}$ E) 1

5. $f\left(\frac{x^2+1}{x^2+2}\right) = x^4 + 3x^2 - 3 \Rightarrow \mathbf{f\left(\frac{2}{3}\right) = ?}$

A) 1 B) 2 C) 3

D) 4 E) 5

6. $f(x) = 4^{x-1} \Rightarrow \mathbf{f\left(\frac{x-2}{2}\right) = ?}$

A) $\frac{\sqrt{f(x)}}{8}$ B) $\frac{\sqrt{f(x)}}{2}$ C) $\frac{\sqrt{f(x)}}{4}$

D) $\sqrt{f(x)}$ E) $\frac{1}{\sqrt{f(x)}}$

7. $f(x) = f(x-1) + x$,

$f(1) = 1 \Rightarrow \mathbf{f(20) = ?}$

A) 205 B) 207 C) 210

D) 211 E) 213

8. $f(x+y) = f(x) + f(y)$,

$f(4) = 10 \Rightarrow \mathbf{f(8) = ?}$

A) −15 B) −10 C) 5

D) 10 E) 20

9. $f(x + y) = f(x) \cdot f(y)$,

$f(16) = 8 \Rightarrow$ **$f(64) = ?$**

A) 8^2 B) 8^3 C) 8^4

D) 8^5 E) 8^6

10. $f: R - \{a\} \to R - \{b\}$,

$f(x) = \dfrac{3x-2}{x+1} \Rightarrow$ **$a + b = ?$**

A) 1 B) 2 C) 3

D) 4 E) 5

11. $\left.\begin{array}{l} f(x) = 4x + 1 \\ gof(x) = x - 3 \end{array}\right\} \Rightarrow$ **$g(-7) = ?$**

A) –5 B) 0 C) 1

D) 2 E) 3

12. $\left.\begin{array}{l} f(x) = x - 1 \\ g(x) = x^2 - 1 \\ h(x) = 3x - 3 \end{array}\right\} \Rightarrow$ **$(gofoh)(2) = ?$**

A) 1 B) 2 C) 3

D) 4 E) 5

13. $f(x) = \dfrac{x+1}{x-2} \Rightarrow$ **$(fof)(x) = ?$**

A) $\dfrac{2x-1}{5-x}$ B) $\dfrac{2x+1}{5-x}$ C) $\dfrac{2x-1}{x-5}$

D) $\dfrac{2x+1}{x-5}$ E) $\dfrac{x+1}{x-5}$

14. $(fof^{-1})(4x + 3) = 15 \Rightarrow$ **$x = ?$**

A) 1 B) 2 C) 3

D) 4 E) 5

15. $f(x) = 8x \Rightarrow$ **$(fofofofof)(x) = ?$**

A) 2^8x B) $2^{10}x$ C) $2^{12}x$

D) $2^{15}x$ E) $2^{16}x$

16. $\left.\begin{array}{l} f(2) = 12 \\ g(4) = 12 \end{array}\right\} \Rightarrow$ **$(f^{-1} o\, g)^{-1}(2) = ?$**

A) 1 B) 2 C) 3

D) 4 E) 5

Yanıtlar / Answers

1. D	4. E	7. C	10. B	13. A	16. D
2. D	5. A	8. E	11. A	14. C	.
3. D	6. A	9. C	12. C	15. D	

1. $f(x) = x + 1,\ g(x) = x^2 - 3 \Rightarrow$ **gof(x) = ?**

A) $x^2 + x - 1$ B) $x^2 + 2x - 1$ C) $x^2 + 2x - 2$

D) $x^2 - x + 1$ E) $x^2 - 2x + 2$

2. $f(x) = x^2 + 2,\ g(x) = 3x - 5 \Rightarrow$ **fog(2) = ?**

A) 2 B) 3 C) 4 D) 5 E) 6

3. $fog(x) = 4x - 3,\ g(x) = x + 1 \Rightarrow$ **f(5) = ?**

A) 9 B) 10 C) 12 D) 13 E) 16

4. $f(2x - 1) = 4x + 3 \Rightarrow$ **$f^{-1}(x)$ = ?**

A) $\frac{x-1}{2}$ B) $\frac{x-2}{2}$ C) $\frac{x-3}{2}$

D) $\frac{x-4}{2}$ E) $\frac{x-5}{2}$

5. $f(x) = 3x - 2,\ fog(x) = 9x - 5 \Rightarrow$ **$g^{-1}(23)$ = ?**

A) 8 B) 10 C) 12 D) 15 E) 18

6. $f(x) = \frac{3x+3}{2x+m},\ f(x) = f^{-1}(x) \Rightarrow$ **m = ?**

A) –3 B) –2 C) 0 D) 2 E) 3

7. $g(x) = 3x^2 - 2,\ f(x) = 2x + 3 \Rightarrow$ **(gof)(0) = ?**

A) 24 B) 25 C) 27 D) 30 E) 33

8. $f(x) = 3x + 4,\ gof(x) = \frac{6x-2}{12} \Rightarrow$ **$g^{-1}(2)$ = ?**

A) $\frac{1}{2}$ B) $\frac{3}{2}$ C) 8 D) 15 E) 17

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9. $f(x) = ax + b$,

$f(x) - f(x-2) = 6,\ f(2) = 4 \Rightarrow \mathbf{f^{-1}(13) = ?}$

A) 2 B) 3 C) 4 D) 5 E) 6

10. $f(x) = 4x - 3,\ f^{-1}(3x-2) = x + 3 \Rightarrow \mathbf{x = ?}$

A) −11 B) −8 C) −4 D) 4 E) 6

11. $f(x) = 5^{x+2} \Rightarrow \mathbf{f(-2) + f^{-1}(5) = ?}$

A) −2 B) −1 C) 0 D) 1 E) 2

12. $f : R - \{a\} \to R - \{b\}$

$f(x) = \dfrac{-3x-5}{1+2x} \Rightarrow \mathbf{a + b = ?}$

A) −2 B) −1 C) 0 D) 1 E) 2

13. $f(x) = \dfrac{3f(x)+2x}{x-3} \Rightarrow \mathbf{f^{-1}(-2) = ?}$

A) −3 B) −2 C) 0 D) 2 E) 3

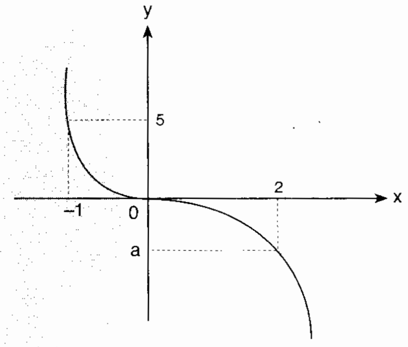
14. $f : [-1, \infty) \to [2, \infty)$

$f(x) = x^2 + 2x + 3 \Rightarrow \mathbf{f^{-1}(x) = ?}$

A) $\sqrt{x-2}$ B) $\sqrt{x-2} - 1$ C) $\sqrt{x-2} - 2$

D) $\sqrt{x-2} + 1$ E) $\sqrt{x-2} + 2$

15.



$f^{-1}(x) = 2x^3 - 3mx - 5$

$\Rightarrow \mathbf{a = ?}$

A) −13 B) −8 C) −6 D) −4 E) −2

16. $f : R \to R$

$\mathbf{f(x) = 2^{x+3}} \quad \Rightarrow \mathbf{f(m + n - 2) = ?}$

A) $\dfrac{f(m+n)}{2}$

B) $\dfrac{f(m)\cdot f(n)}{32}$

C) $f(m) \cdot f(n)$

D) $2^{f(m)-f(n)}$

E) $[f(m)]^{f(n)-1}$

[KARADENİZ TEKNİK ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

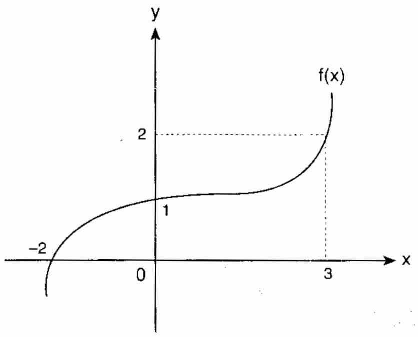
1. C	**4. E**	**7. B**	**10. B**	**13. E**	**16. B**
2. B	**5. A**	**8. E**	**11. C**	**14. B**	
3. D	**6. A**	**9. D**	**12. A**	**15. A**	

1. $f = \{(2, 3), (-2, 1), (1, 4), (3, -1)\} \Rightarrow$

$f(2) + f^{-1}(1) + f(1) - f^{-1}(-1) = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

2.



$f^{-1}(2) + f(0) - f^{-1}(0) = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

3. $f : R - \{3\} \rightarrow R - \{4\}$

$f(x) = \dfrac{ax-5}{bx-6} \Rightarrow$ **$a + b = ?$**

A) 6 B) 8 C) 10 D) 12 E) 15

4. $f : R - \left\{\dfrac{1}{2}\right\} \rightarrow R - \left\{-\dfrac{3}{2}\right\}$

$f(x) = \dfrac{-3x+4}{2x-1} \Rightarrow$ **$f^{-1}(3) = ?$**

A) $\dfrac{7}{9}$ B) 1 C) $\dfrac{11}{9}$ D) $\dfrac{16}{9}$ E) 2

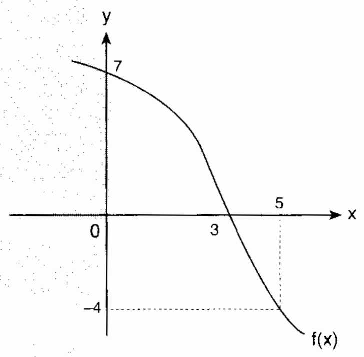
5. $x = \dfrac{3f(x)-2}{4f(x)-5} \Rightarrow$ **$f^{-1}(2) = ?$**

A) $\dfrac{1}{3}$ B) $\dfrac{2}{3}$ C) 1 D) $\dfrac{4}{3}$ E) $\dfrac{5}{3}$

6. $f(x) = 3^{2x-1} + 2 \Rightarrow$ **$f^{-1}(11) = ?$**

A) $\dfrac{1}{2}$ B) 1 C) $\dfrac{3}{2}$ D) 2 E) $\dfrac{5}{2}$

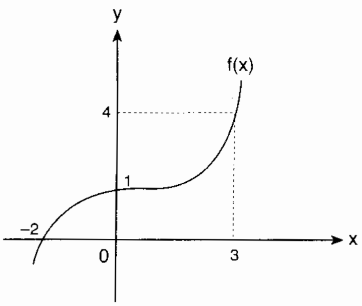
7.



$\dfrac{f(0) + f^{-1}(-4)}{f^{-1}(0)} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

8.



$\dfrac{f^{-1}(4) + f^{-1}(0)}{f(0)} = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

9. $f(2x-5)=3x+2$,

$f^{-1}(a+3)=7 \Rightarrow \mathbf{a=?}$

A) 10 B) 12 C) 15 D) 17 E) 20

10. $f(x+1)=2^{x+3}-1 \Rightarrow \mathbf{f^{-1}(15)=?}$

A) 1 B) 2 C) 3 D) 4 E) 5

11. $f(x)+f(x+1)=6x-5 \Rightarrow \mathbf{f^{-1}(5)=?}$

A) –3 B) –1 C) 0 D) 1 E) 3

12. $f(x+2)=\dfrac{x^2+4x+4}{x+3} \Rightarrow \mathbf{f(x)=?}$

A) $\dfrac{x^2}{x+1}$ B) $\dfrac{x^2}{x-1}$ C) $\dfrac{x}{x+1}$

D) $\dfrac{x}{x-1}$ E) $\dfrac{1}{x+1}$

13. $f(2x-3)=\dfrac{x+2}{3} \Rightarrow \mathbf{f^{-1}(2)=?}$

A) 4 B) 5 C) 6 D) 7 E) 8

14. $f(x)=81^x \Rightarrow \mathbf{f^{-1}(27)\cdot f^{-1}\left(\frac{1}{9}\right)=?}$

A) $-\dfrac{3}{8}$ B) $-\dfrac{1}{4}$ C) $\dfrac{1}{2}$

D) $\dfrac{1}{4}$ E) $\dfrac{3}{8}$

15. $f^{-1}(x^2-4)=4x+6 \Rightarrow \mathbf{f(-2)=?}$

A) –2 B) –1 C) 0 D) 1 E) 2

16.

$f\left(1+\dfrac{x}{2}\right)=\dfrac{x}{4}-1$

$g(x)=2x-3$

$\mathbf{(gof^{-1})(2)=?}$

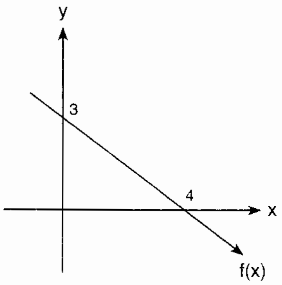
A) 6 B) 9 C) 11 D) 12 E) 14

[YTÜ-1 YÖS 2016]

Yanıtlar / Answers

1. B	**4. A**	**7. D**	**10. B**	**13. B**	**16. C**
2. E	**5. D**	**8. A**	**11. E**	**14. A**	
3. C	**6. C**	**9. D**	**12. A**	**15. C**	

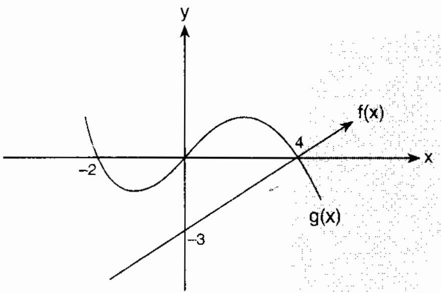
1.



$f(0) + f^{-1}(0) = ?$

A) –4 B) –1 C) 0 D) 3 E) 7

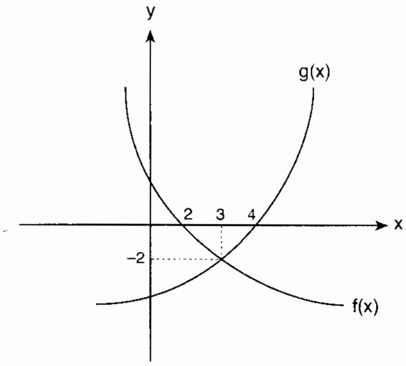
2.



$(fog)(x-2) = -3 \Rightarrow \sum x = ?$

A) 2 B) 4 C) 6 D) 8 E) 10

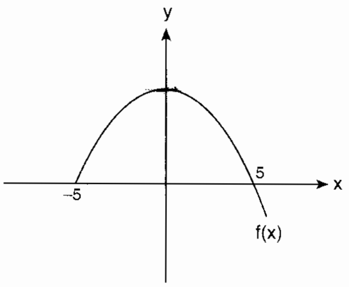
3.


y
g(x)
2
3
4
x
–2
f(x)

$\Rightarrow (f^{-1}og)(3) = ?$

A) –2 B) 3 C) 4 D) 2 E) 0

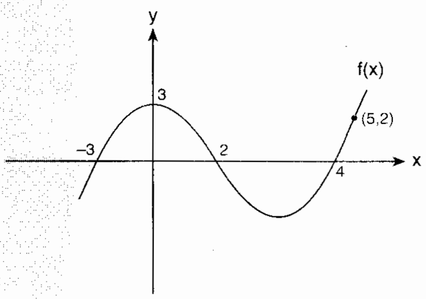
4.



$x \cdot f(x) > 0 \Rightarrow \sum x = ?$

A) 5 B) 7 C) 9 D) 10 E) 12

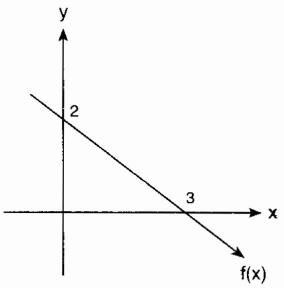
5.


y
f(x)
3
(5,2)
–3
2
x
4

$f(-3) + f(2) + f(0) + f(4) + f(5) = ?$

A) 6 B) 5 C) 4 D) 3 E) 2

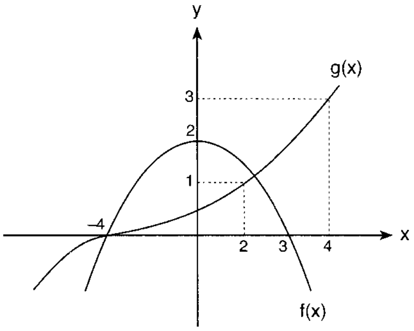
6.



$g(x) = x^2 - 1 \Rightarrow (f^{-1}og)(3) = ?$

A) –5 B) –8 C) –9 D) –16 E) –20

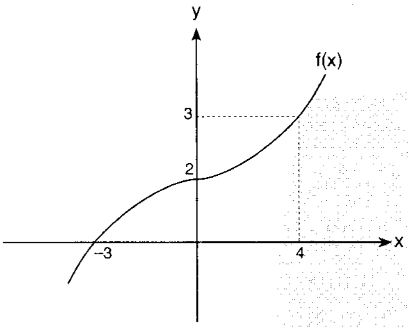
7.



(gofof)(3) = ?

A) 1 B) 2 C) 3 D) 4 E) 5

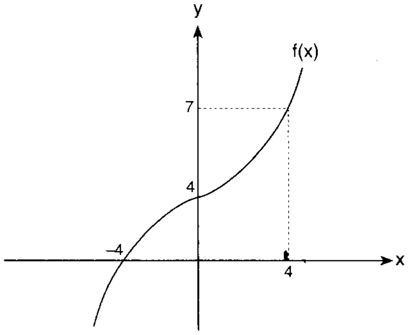
8.



$f(4) + f(0) + f^{-1}(3) = ?$

A) 8 B) 9 C) 12 D) 15 E) 16

9.



$f(a-2) = f^{-1}(7) \Rightarrow$ **a = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

10. A = {1, 2, 3, 4, 5},

$f : A \to A,\ g : A \to A$

$$\left.\begin{array}{l} f=\begin{pmatrix}1 & 2 & 3 & 4 & 5\\ 3 & 1 & 4 & 2 & 5\end{pmatrix} \\ \\ g=\begin{pmatrix}1 & 2 & 3 & 4 & 5\\ 2 & 3 & 1 & 4 & 5\end{pmatrix}\end{array}\right\} \Rightarrow \mathbf{(f^{-1}og)(1) = ?}$$

A) 1 B) 2 C) 3 D) 4 E) 5

11. A = {1, 2, 3, 4},

$f : A \to A,\ g : A \to A$

$$\left.\begin{array}{l} f=\begin{pmatrix}1 & 2 & 3 & 4\\ 1 & 3 & 4 & 2\end{pmatrix} \\ \\ g=\begin{pmatrix}1 & 2 & 3 & 4\\ 4 & 2 & 3 & 1\end{pmatrix}\end{array}\right\} \Rightarrow \mathbf{f^{-1}og(x) = ?}$$

A) $\begin{pmatrix}1 & 2 & 3 & 4\\ 1 & 3 & 4 & 2\end{pmatrix}$ B) $\begin{pmatrix}1 & 2 & 3 & 4\\ 1 & 2 & 3 & 4\end{pmatrix}$

C) $\begin{pmatrix}1 & 2 & 3 & 4\\ 2 & 1 & 3 & 4\end{pmatrix}$ D) $\begin{pmatrix}1 & 2 & 3 & 4\\ 3 & 2 & 4 & 1\end{pmatrix}$

E) $\begin{pmatrix}1 & 2 & 3 & 4\\ 3 & 4 & 2 & 1\end{pmatrix}$

12. A = {1, 2, 3, 4, 5},

$f : A \to A,$

$$f=\begin{pmatrix}1 & 2 & 3 & 4 & 5\\ 3 & 4 & 1 & 2 & 5\end{pmatrix},$$

$(fof)(x) = 4 \Rightarrow$ **x = ?**

A) 1 B) 2 C) 3 D) 4 E) 5

13. A = {a, b, c, d, e},

$f : A \to A,\ g : A \to A$

$$f=\begin{pmatrix}a & b & c & d & e\\ b & a & c & d & e\end{pmatrix} \Rightarrow \mathbf{f^{-1}(c) = ?}$$

A) a B) b C) c D) d E) e

Yanıtlar / Answers

1. E	**4. D**	**7. A**	**10. D**	**13. C**
2. D	**5. B**	**8. B**	**11. E**	
3. B	**6. C**	**9. B**	**12. D**	

1. $g(4) \in R^+$, $f(x) = x^2 + 4x$,

$(fog)(x) = 2x + 2 \cdot g(x) \Rightarrow$ **$g(4) = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

2. $f(x) = 2x - 24$, $g(x) = ax + 3a$,

$fog(x) = gof(x) \Rightarrow$ **$a = ?$**

A) $\frac{2}{3}$ B) $\frac{4}{3}$ C) $\frac{4}{9}$ D) $\frac{7}{9}$ E) $\frac{8}{9}$

3. $f : (-5, 3] \rightarrow B$

$f(x) = 3x - 8 \Rightarrow$ **$B = ?$**

A) (–23,1) B) (–23,1] C) [–23,1]

D) (–8, 2] E) [–8, 2]

4. $f : A \rightarrow A$, $g : A \rightarrow A$,

$A = \{1, 2, 3, 4\}$,

$f = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 3 & 1 \end{pmatrix}$, $g = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 4 & 3 & 1 & 2 \end{pmatrix} \Rightarrow \left(fog^{-1}\right)^{-1} = ?$

A) $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 1 & 3 \end{pmatrix}$ B) $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 3 & 2 & 1 & 4 \end{pmatrix}$ C) $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 4 & 3 & 2 & 1 \end{pmatrix}$

D) $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 \end{pmatrix}$ E) $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 1 & 4 & 3 & 2 \end{pmatrix}$

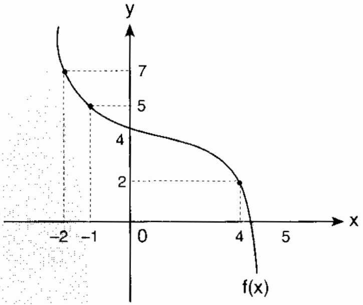
5. $A = \{a, b, c, d\}$, $f : A \rightarrow A$, $g : A \rightarrow A$,

$f = \begin{pmatrix} a & b & c & d \\ b & d & a & c \end{pmatrix}$, $g = \begin{pmatrix} a & b & c & d \\ c & a & d & b \end{pmatrix}$, $(hof) = g \Rightarrow$ **$h = ?$**

A) $\begin{pmatrix} a & b & c & d \\ b & a & d & c \end{pmatrix}$ B) $\begin{pmatrix} a & b & c & d \\ c & d & b & a \end{pmatrix}$ C) $\begin{pmatrix} a & b & c & d \\ c & a & b & d \end{pmatrix}$

D) $\begin{pmatrix} a & b & c & d \\ a & b & c & d \end{pmatrix}$ E) $\begin{pmatrix} a & b & c & d \\ d & c & b & a \end{pmatrix}$

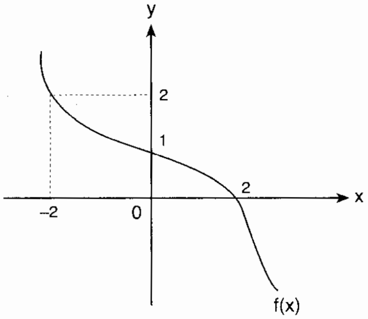
6.



$$\frac{\mathbf{f(4) + f^{-1}(5) + f^{-1}(7)}}{\mathbf{2f(-1)}} = ?$$

A) $\frac{-3}{10}$ B) $\frac{-1}{5}$ C) $\frac{-1}{10}$ D) $\frac{1}{10}$ E) $\frac{1}{5}$

7.



$\Rightarrow$ **$(fofof)(-2) = ?$**

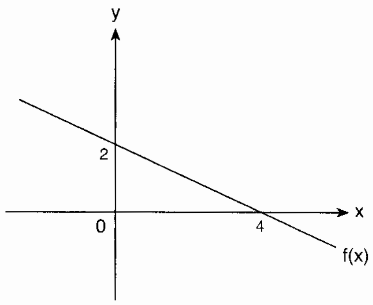
A) –2 B) –1 C) 0 D) 1 E) 2

8. $x \in N^+$

$f(x^3 - 1) = 2^x + 3^x \Rightarrow$ **$f^{-1}(13) = ?$**

A) 5 B) 7 C) 8 D) 9 E) 11

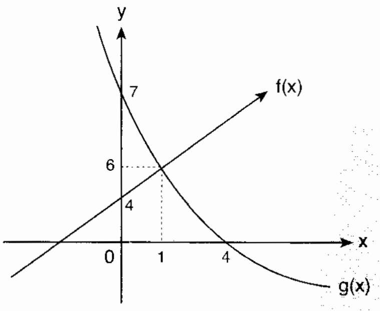
9.



$\Rightarrow f^{-1}(-4) = ?$

A) 6 B) 8 C) 10 D) 12 E) 14

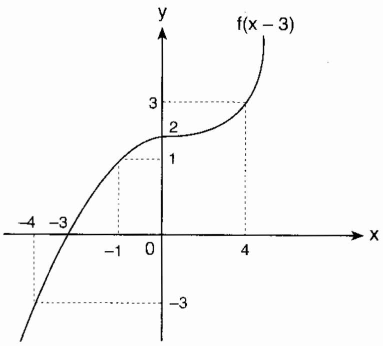
10.



$$\frac{gof(0)+g^{-1}(6)}{(f^{-1}og)(1)} = ?$$

A) –2 B) –1 C) 1 D) 2 E) 3

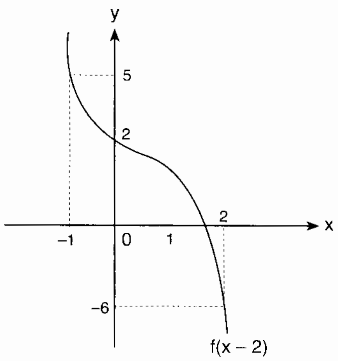
11.



$\Rightarrow (fof)(-4) - (fof)^{-1}(2) = ?$

A) –10 B) –5 C) 0 D) 5 E) 10

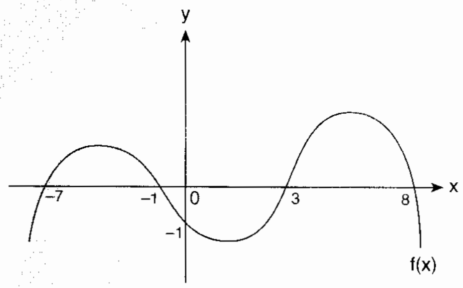
12.



$$\frac{f(0)+f(-3)}{f^{-1}(2)+f^{-1}(5)} = ?$$

A) $-\frac{1}{3}$ B) $-\frac{1}{5}$ C) $\frac{1}{5}$ D) $\frac{1}{3}$ E) $\frac{1}{2}$

13.



$x \in Z,\ 0 \leq f(x) \Rightarrow \sum x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

14. $f(x+1) = x^2 - 2$

$g(x-1) = 2x - 3$

$\Rightarrow (fog^{-1})(5) = ?$

A) 5 B) 4 C) 3 D) 2 E) 9

[YTÜ - 2 YÖS 2016]

Yanıtlar / Answers

1. B	4. A	7. D	10. C	13. D
2. E	5. E	8. B	11. E	14. D
3. B	6. C	9. D	12. C	

İŞLEM ve MODÜLER ARİTMETİK
OPERATION and MODULAR ARITHMETICS

BÖLÜM
CHAPTER 4

Alıştırmalar / Exercises

Alıştırma / Exercise 1

1. $x \Delta y = x^y - y^x + 2xy$

$\Rightarrow$ **$3 \Delta 2 = ?$**

Yanıt / The answer is **13**

2. $x \square y = x + 2y$

$x \Delta y = y - x$

$\Rightarrow$ **$(1 \square 2) \Delta (1 \square 3) = ?$**

Yanıt / The answer is **2**

3. $x \Delta y = x^3 - y^3$

$x \square y = x \cdot y - x - y$

$\Rightarrow$ **$(2 \Delta 1) \square (3 \Delta 2) = ?$**

Yanıt / The answer is **107**

4. $\dfrac{3}{x \Delta y} = \dfrac{1}{x} - \dfrac{2}{y} \Rightarrow$ **$2 \Delta 5 = ?$**

Yanıt / The answer is **30**

5. $x \Delta y = x + 2y - 4$

$2 \Delta m = 8 \Rightarrow$ **$m = ?$**

Yanıt / The answer is **5**

6. $x \square y = x^2 - 2xy + y^2$

$1 \square (2 \square a) = 16 \Rightarrow$ **$\sum a = ?$**

Yanıt / The answer is **4**

7. $x \Delta y = x^2 - y - 3$

$(3 \Delta 4) \Delta a = 2 \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **–1**

8. $x \Delta y = 2x + 3y$

$a \Delta b = 23,\ b \Delta a = 22 \Rightarrow \mathbf{a \cdot b = ?}$

Yanıt / The answer is **20**

9. $x \Delta y = 2x + y - 4$

$x \square y = x - y + 2xy$

$3 \Delta (2 \square a) = 7 \Rightarrow \mathbf{a = ?}$

Yanıt / The answer is **1**

10. $(3a + b) \square (a - 2b) = a^b - b^a + 2$

$\Rightarrow \mathbf{14 \square -7 = ?}$

Yanıt / The answer is **120**

11. $x \square y = y \cdot (y \square x) + 5$

$\Rightarrow \mathbf{2 \square 3 = ?}$

Yanıt / The answer is **–4**

12. $x \Delta y = x^2 - y^2 + xy,$

$(-1 \Delta 2) \Delta x = 1$

$\Rightarrow \sum \mathbf{x = ?}$

Yanıt / The answer is **–5**

13. $x \,\Delta\, 2y = xy - y$

$\Rightarrow$ **$3 \,\Delta\, 2 = ?$**

Yanıt / The answer is **2**

14. $\frac{1}{x} \,\Delta\, \frac{1}{y} = 3x + 4y$

$\Rightarrow$ **$3 \,\Delta\, 2 = ?$**

Yanıt / The answer is **3**

15. $a \bigstar b = (x + y)^2 - 4xy$

$\Rightarrow$ **$2001 \bigstar 2003 = ?$**

Yanıt / The answer is **4**

16. $a \bullet b = b^a$

$a \blacksquare b = \sqrt[b]{a}$

$\Rightarrow$ **$(4 \bullet 3) \blacksquare 2 = ?$**

Yanıt / The answer is **9**

17. $(x \,\Delta\, y) = 2x + 3(y \,\Delta\, x)$

$\Rightarrow$ **$-1 \,\Delta\, -1 = ?$**

Yanıt / The answer is **1**

18. $(2a - b) \,\Delta\, (3a + b) = a^2 - ab + b^2$

$\Rightarrow$ **$7 \,\Delta\, 13 = ?$**

Yanıt / The answer is 13

19. $x \Delta e = e \Delta x = x$

$x \Delta x^{-1} = e$

$x \Delta y = x \cdot y + 3x + 3y + 6$

$\Rightarrow$ **$4^{-1} = ?$**

Yanıt / The answer is $-\dfrac{20}{7}$

20. $x \Delta y = x + y - 8$

$x \Delta e = e \Delta x = x \Rightarrow$ **$e = ?$**

Yanıt / The answer is **8**

21.

Δ	F	E	R	C	A	N
F	C	A	N	F	E	R
E	A	N	F	E	R	C
R	N	F	E	R	C	A
C	F	E	R	C	A	N
A	E	R	C	A	N	F
N	R	C	A	N	F	E

$x \Delta x = x^2 \Rightarrow$ **$(F \Delta A^2) \Delta R = ?$**

Yanıt / The answer is **E**

22. $a \Delta b = \begin{cases} 2a + b & b \equiv 1 \pmod 2 \\ a^2 - b & b \equiv 0 \pmod 2 \end{cases}$

$\Rightarrow$ **$2 \Delta (3 \Delta 4) = ?$**

Yanıt / The answer is **9**

23. $5^{123} \equiv x \pmod 7 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **6**

24. $3^{192} + 3^{194} \equiv x \pmod 5 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **0**

1. $47^{171} \equiv x \pmod 7 \Rightarrow$ **x = ?**

Yanıt / The answer is **6**

2. $4^{1091} \equiv x \pmod 6 \Rightarrow$ **x = ?**

Yanıt / The answer is **4**

3. $5^{2n+1} \equiv x \pmod 8 \Rightarrow$ **x = ?**

Yanıt / The answer is **5**

4. $(47)^{4n+3} \equiv x \pmod 5 \Rightarrow$ **x = ?**

Yanıt / The answer is **3**

5. $a = (142)^{142}$

$b = (317)^{317}$

$a \cdot b \equiv x \pmod 5 \Rightarrow$ **x = ?**

Yanıt / The answer is **3**

6. $A = (213)^{214} \Rightarrow \begin{array}{r|l} A & \underline{10} \\ \underline{\quad} & \\ ? & \end{array}$

Yanıt / The answer is **9**

7. $A = (513)^{242} \Rightarrow \begin{array}{r|l} A & \underline{7} \\ \underline{-\quad} & \\ ? & \end{array}$

Yanıt / The answer is **4**

8. $\left.\begin{array}{l} A = (373)^{100} \\ B = (241)^{100} \end{array}\right\} \Rightarrow \begin{array}{r|l} A + B & \underline{7} \\ \underline{-\qquad} & \\ ? & \end{array}$

Yanıt / The answer is **6**

9. $-13 \equiv x \pmod 9 \Rightarrow$ **$x = ?$**

Yanıt / The answer is **5**

10. $\begin{array}{r|l} 62 & \underline{A} \\ \underline{-\quad} & \\ 2 & \end{array} \qquad \begin{array}{r|l} 107 & \underline{A} \\ \underline{-\quad} & \\ 2 & \end{array}$

$\Rightarrow$ **$\max(A) = ?$**

Yanıt / The answer is **15**

11. $A \in N$,

$A = 3k + 2 = 5m + 2$

$\Rightarrow$ **$\min(A) = ?$**

Yanıt / The answer is **17**

12. $\left.\begin{array}{l} 143 \equiv 3 \pmod x \\ 256 \equiv 4 \pmod x \end{array}\right\} \Rightarrow$ **$\max(x) = ?$**

Yanıt / The answer is **28**

13. $A = 0! + 1! + 2! + 3! + \ldots + 73!$

$A \equiv x \pmod{5} \Rightarrow$ **$x = ?$**

Yanıt / The answer is **4**

14. $2x - 1 \equiv 4 \pmod{7}$

$x \in Z^{+} \Rightarrow$ **$\min(x) = ?$**

Yanıt / The answer is **6**

15. $x - y \equiv 3 \pmod{8}$

$x \cdot y \equiv 5 \pmod{8}$

$x^2 + y^2 \equiv a \pmod{8}$

$\Rightarrow$ **$a = ?$**

Yanıt / The answer is **3**

16. $42! - 33! \equiv x \pmod{11} \Rightarrow$ **$x = ?$**

Yanıt / The answer is **0**

17. $A = \{x \mid 17 < x < 125,\ x \equiv 2 \pmod{3}\}$

$B = \{y \mid 23 < y < 147,\ y \equiv 4 \pmod{5}\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

Yanıt / The answer is **7**

18. $f : Z_{/5} \rightarrow Z_{/5}$

$f(x) = \overline{2}x + \overline{3} \Rightarrow$ **$f(\overline{3}) = ?$**

Yanıt / The answer is **4**

19. $f(x)=\begin{cases}2x+1\ , & x\equiv 1 \pmod 5\\ 1-x\ , & x\equiv 2 \pmod 5\end{cases} \Rightarrow$ **$f(2)+f(6)=?$**

Yanıt / The answer is **12**

20. $(-2)^{1907}\equiv x \pmod 5 \Rightarrow$ **$x=?$**

Yanıt / The answer is **2**

21. $(2)^{10}+(12)^{10}+(52)^{10}\equiv x \pmod{10} \Rightarrow$ **$x=?$**

Yanıt / The answer is **2**

22. $(57)^{1988}\equiv x \pmod 6 \Rightarrow$ **$x=?$**

Yanıt / The answer is **3**

23. $x\equiv 3 \pmod 5$

$x\equiv 4 \pmod 6$

$x\equiv 5 \pmod 7$

$\Rightarrow$ **$\min(x)=?$**

Yanıt / The answer is **208**

24. $Z_{/5}$,

$f(x-1)=\dfrac{2x+3}{4} \Rightarrow$ **$f^{-1}(x)=?$**

Yanıt / The answer is **2x**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1. $x \bullet y = (x - y)^2 + xy$

$\Rightarrow$ **$(2 \bullet -1) \bullet 1 = ?$**

A) 20 B) 23 C) 30 D) 37 E) 43

2. $a \square b = 2a - b^2$

$a \Delta b = a^b + b$

$\Rightarrow$ **$(2 \Delta 1) \square (3 \Delta 2) = ?$**

A) –110 B) –113 C) –115

D) –120 E) –125

3. $a \Delta b = \sqrt{a+b-2\sqrt{ab}}$

$\Rightarrow$ **$121 \Delta 16 = ?$**

A) 1 B) 3 C) 5 D) 7 E) 9

4. $a, b \in R^+$

$\frac{1}{a-1} \bigcirc \frac{1}{b^2} = a + b - 2$

$\Rightarrow$ **$-2 \bigcirc 4 = ?$**

A) –2 B) $-\frac{1}{2}$ C) –1 D) $\frac{1}{4}$ E) 1

5. $x \square y = x - y + 2$

$x \Delta y = x + y + (y \square x)$

$\Rightarrow$ **$15 \Delta 5 = ?$**

A) 5 B) 12 C) 15 D) 20 E) 25

6. $x \heartsuit y = x - y + 2$

$x \blacksquare y = x + y + 2$

$2 \heartsuit (3 \blacksquare m) = -2 \Rightarrow$ **$m = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

7. $x^3 \blacktriangle y^2 = x^3 - 3x^2y + 3xy^2 - y^3$

$\Rightarrow$ **$27 \blacktriangle 16 = ?$**

A) –2 B) –1 C) 0 D) 1 E) 2

8. $(2a + 1) \blacktriangle (2b - 1) = a^2 - b + ab$

$\Rightarrow$ **$3 \blacktriangle 3 = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

9. $\sqrt[3]{x} \bigcirc \sqrt[4]{y} = x - 2y + 4$

$\Rightarrow$ **$5 \bigcirc 3 = ?$**

A) –25 B) –30 C) –33 D) –38 E) –42

10. $y \in R^+$

$\frac{1}{x} \bullet \frac{1}{y^2} = \frac{x+y}{x-y}$

$\Rightarrow$ **$3 \bullet 4 = ?$**

A) –1 B) –2 C) –3 D) – 4 E) –5

11. $(x + y) \Delta (x - y) = x^2 - y^2 + 1$

$\Rightarrow$ **$4 \Delta 8 = ?$**

A) 30 B) 31 C) 32 D) 33 E) 34

12. $x \Delta y = y \Delta x$

$2(x \Delta y) = x^2 + xy - (y \Delta x)$

$\Rightarrow$ **$1 \Delta 2 = ?$**

A) –1 B) 0 C) 1 D) 2 E) 3

13. $x \blacklozenge y = 2(y \blacklozenge x) + 2x - y$

$\Rightarrow$ **$4 \blacklozenge 5 = ?$**

A) –5 B) –4 C) –3 D) –2 E) –1

14. A = {G, E, Z, İ}

Δ	G	E	Z	İ
G	İ	G	E	Z
E	G	E	Z	İ
Z	E	Z	İ	G
İ	Z	İ	G	E

$x \Delta x = x^2 \Rightarrow$ **$(G \Delta \dot{I})^2 \Delta (Z \Delta E)^2 = ?$**

A) G Δ Z B) E Δ Z C) Z Δ İ

D) İ Δ E E) Z Δ Z

15. A = {A, B, C, D, E}

Δ	A	B	C	D	E
A	C	D	E	A	B
B	D	E	A	B	C
C	E	A	B	C	D
D	A	B	C	D	E
E	B	C	D	E	A

$x \Delta x = x^2 \Rightarrow$ **$(E \Delta D)^{-1} \Delta B = ?$**

A) A B) B C) C D) D E) E

16. A = {1, 2, 3, 4, 5}

Δ	1	2	3	4	5
1	2	3	4	5	1
2	3	4	5	1	2
3	4	5	1	2	3
4	5	1	2	3	4
5	1	2	3	4	5

$x \Delta x = x^2 \Rightarrow$ **$(1 \Delta 5)^{-2} = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

Yanıtlar / Answers

1. E	**4. C**	**7. B**	**10. E**	**13. A**	**16. C**
2. C	**5. B**	**8. A**	**11. D**	**14. A**	
3. D	**6. A**	**9. C**	**12. C**	**15. A**	

1. $a \star b = b^a - a^4$

$\Rightarrow \mathbf{(-1) \star 2 = ?}$

A) $\frac{1}{2}$ B) $-\frac{1}{2}$ C) 2

D) -1 E) $\frac{5}{2}$

2. $a \blacktriangle b = b - a,$

$2 \blacktriangle (1 \blacktriangle k) = 5 \Rightarrow \mathbf{k = ?}$

A) 2 B) $\frac{3}{4}$ C) 5

D) $-\frac{6}{5}$ E) 8

3. $a \circledast b = a^b - \frac{a}{b}$

$\Rightarrow \mathbf{(4 \circledast 2) \circledast (-1) = ?}$

A) -13 B) 14 C) $\frac{197}{14}$

D) $\frac{195}{14}$ E) $\frac{13}{14}$

4. $a \square b = 2a + b - 1,$

$a \blacklozenge b = a + 2b - 1,$

$(3 \square m) \blacklozenge (m \square 3) = 98$

$\Rightarrow \mathbf{m = ?}$

A) 14 B) 16 C) 18

D) 20 E) 22

5. $a \bigcirc b = a + b - 9,$

$a \blacksquare b = (a \bigcirc b) + 3$

$\Rightarrow \mathbf{\frac{2^{a \blacksquare b}}{2^{a \bigcirc b}} = ?}$

A) 8 B) 16 C) 32

D) 64 E) 128

6. $a \blacktriangle b = \begin{cases} 0 \ , & a < b \\ 1 \ , & a = b \\ 2 \ , & a > b \end{cases}$

$\Rightarrow \mathbf{(2 \blacktriangle 3) \blacktriangle (2 \blacktriangle -1) = ?}$

A) 4 B) 3 C) 2

D) 1 E) 0

7. $\frac{1}{a \blacktriangle b} = b^a - a \cdot b,$

$2 \blacktriangle b = -1 \Rightarrow \mathbf{b = ?}$

A) 1 B) 2 C) 3

D) 4 E) 5

8. $a \Delta b = 3a + 3b + 2ab + 3,$

$a \Delta e = a \Rightarrow \mathbf{e = ?}$

A) -2 B) -1 C) 0

D) 1 E) 2

9. $x \star y = \dfrac{x-y}{x+y}$,

$x \clubsuit y = 2xy-1$,

$(1 \clubsuit 5) \star m = \dfrac{2}{3} \Rightarrow$ **m = ?**

A) 7 B) 12 C) $\frac{1}{2}$

D) $\frac{9}{5}$ E) $-\frac{4}{5}$

10.

★	M	E	H	R	A	N
M	M	E	H	R	A	N
E	E	H	R	A	N	M
H	H	R	A	N	M	E
R	R	A	N	M	E	H
A	A	N	M	E	H	R
N	N	M	E	H	R	N

(M ★ N) ★ x = H ⇒ **x = ?**

A) M B) N C) H

D) R E) A

11.

★	U	L	R	İ	C	H
U	L	R	C	H	İ	U
L	R	İ	H	U	C	L
R	İ	C	U	L	H	R
İ	C	H	L	R	U	İ
C	H	U	R	İ	L	C
H	U	L	İ	C	R	H

(U ★ L) ★ (R ★ C) = ?

A) U B) L C) R

D) İ E) C

12.

A	R	M	Z	N
R	N	Z	M	R
M	Z	M	R	N
Z	M	R	N	Z
N	R	N	Z	M

(R A M) A (Z A N) = ?

A) R B) M C) Z

D) N E) R^{-1}

13. $a \star a = a^2$

★	a	b	c	d	e
a	b	c	d	a	e
b	c	d	a	e	b
c	d	a	e	b	c
d	a	e	b	c	d
e	e	b	c	d	a

$(a \star e) \star (e^2 \star b^2) = ?$

A) e B) d C) c

D) b E) a

14. y ✎ y = y^2

✎	1	2	3	4	5
1	1	2	3	4	5
2	2	3	4	5	1
3	3	4	5	1	2
4	4	5	1	y	3
5	5	x	2	3	4

(x ✎ 1)$^{-1}$ ✎ (y^2 ✎ 3) = ?

A) 1 B) 2 C) 3

D) 4 E) 5

15. $a > 0$, $b > 0$, a ✿ b = $\dfrac{ab}{a+b}$

$\dfrac{1}{3}$ ✿ $\dfrac{2}{5}$ = $\dfrac{1}{2}$ ✿ m ⇒ **m = ?**

A) $\frac{2}{13}$ B) $\frac{1}{5}$ C) $\frac{2}{7}$ D) $\frac{7}{2}$ E) $\frac{13}{2}$

[İSTANBUL ÜNİVERSİTESİ – YÖS 2016]

Yanıtlar / Answers

1. B	**4. C**	**7. A**	**10. D**	**13. A**
2. E	**5. A**	**8. B**	**11. C**	**14. E**
3. C	**6. E**	**9. D**	**12. D**	**15. C**

1. $x \Delta y = x^2 - xy \Rightarrow \mathbf{(2 \Delta 1) \Delta 3 = ?}$

A) –4 B) –2 C) 2 D) 4 E) 6

2. $a \Delta b = a^2 - b^2$

$a \square b = a \cdot b - a + b$

$\Rightarrow \mathbf{(3 \Delta 2) \square (2 \Delta 1) = ?}$

A) 10 B) 11 C) 12 D) 13 E) 14

3. $x \Delta y = 2x + y - 2m + 3$

$2 \Delta 3 = -4 \Rightarrow \mathbf{m = ?}$

A) 5 B) 6 C) 7 D) 8 E) 10

4. $x \Delta y = x + 2y - 3$

$x \square y = 3x + (y \Delta x)$

$\Rightarrow \mathbf{(2 \Delta 1) \square 3 = ?}$

A) 5 B) 6 C) 7 D) 8 E) 10

5. $x \Delta y = x - y + x \cdot y$

$2 \Delta m = 8 \Rightarrow \mathbf{m = ?}$

A) 4 B) 5 C) 6 D) 7 E) 8

6. $x \Delta y = x^2 - y - 3$

$(3 \Delta 4) \Delta m = -12 \Rightarrow \mathbf{m = ?}$

A) 9 B) 10 C) 11 D) 12 E) 13

7. $x \square y = x + y - 4$

$x \Delta y = x + y + 2xy$

$3 \square (2 \Delta m) = 16 \Rightarrow \mathbf{m = ?}$

A) 2 B) 3 C) 4 D) 5 E) 6

8. $(a - 1) \Delta (b + 1) = a \cdot b + 2 \Rightarrow \mathbf{4 \Delta 6 = ?}$

A) 24 B) 25 C) 26 D) 27 E) 28

9. $x \Delta (x+y) = x^2 + 2xy - 1 \Rightarrow$ **$2 \Delta 5 = ?$**

A) 10 B) 11 C) 13 D) 14 E) 15

10. $\sqrt{x} \Delta \sqrt[3]{y} = 2x - 3y + x \cdot y \Rightarrow$ **$3 \Delta 2 = ?$**

A) 66 B) 68 C) 70 D) 72 E) 74

11. $\frac{1}{x} \Delta \frac{1}{y} = \frac{x+y}{x \cdot y}$

$\Rightarrow$ **$2 \Delta 3 = ?$**

A) 4 B) 5 C) 6 D) 8 E) 10

12. $a, b \in R^+$

$x \square y = \frac{x}{y} + \frac{y}{x}$

$a \cdot b = 3$

$a \square b = 14 \Rightarrow$ **$a - b = ?$**

A) 4 B) 5 C) 6 D) 7 E) 8

13. $A = \{1, 2, 3, 4, 5\}$

Δ	1	2	3	4	5
1	4	5	1	2	3
2	5	1	2	3	4
3	1	2	3	4	5
4	2	3	4	5	1
5	3	4	5	1	2

$x \Delta x = x^2 \Rightarrow$ **$(1 \Delta 2)^2 \Delta (4 \Delta 5)^2 = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

14. $a \square b = a^2 + b^2$

$15 \square 20 = m \square 7 \Rightarrow$ **$m = ?$**

A) 18 B) 19 C) 21 D) 23 E) 24

15.

Δ	C	A	N	E	R
C	R	C	A	N	E
A	C	A	N	E	R
N	A	N	E	R	C
E	N	E	R	C	A
R	E	R	C	A	N

$x \Delta x = x^2 \Rightarrow$ **$(N \Delta R)^{-2} = ?$**

A) C B) A C) N D) E E) R

16.

◆	K	A	L	E	M
K	E	M	K	A	L
A	M	K	A	L	E
L	K	A	L	E	M
E	A	L	E	M	K
M	L	E	M	K	A

$\Rightarrow$ **$(A^2 ◆ K)^{-1} = ?$**

A) K B) A C) L D) E E) M

[AKDENİZ ÜNİVERSİTESİ – YÖS 2014]

Yanıtlar / Answers

1. B	4. A	7. B	10. A	13. C	16. B
2. D	5. C	8. D	11. B	14. E	
3. C	6. E	9. E	12. C	15. D	

1. $Z_{/8}$,

   $3x + 5 \equiv 6 \pmod 8 \Rightarrow$ **x = ?**

   A) 2 B) 3 C) 4 D) 5 E) 6

2. $$f(x) = \begin{cases} 2x+1, & x \equiv 0 \pmod 5 \\ x+1, & x \equiv 1 \pmod 5 \\ 2x-1, & x \equiv 2 \pmod 5 \end{cases}$$

   $\Rightarrow$ **(fofof)(10) = ?**

   A) 40 B) 41 C) 42 D) 43 E) 44

3. $Z_{/5}$,

   $x + 2 \equiv 3 \pmod 5 \Rightarrow$ **x = ?**

   A) 1 B) 2 C) 3 D) 4 E) 5

4. $(1901)^{1917} \equiv x \pmod 6 \Rightarrow$ **x = ?**

   A) 1 B) 2 C) 3 D) 4 E) 5

5. $(2027)^{1908} \equiv x \pmod 5 \Rightarrow$ **x = ?**

   A) 0 B) 1 C) 2 D) 3 E) 4

6. $(8197)^{198} \equiv \ldots\ldots\ldots\; x \Rightarrow$ **x = ?**

   A) 1 B) 3 C) 5 D) 7 E) 9

7. $3^{8k+2} + 6^{8k+4} \equiv x \pmod 5 \Rightarrow$ **x = ?**

   A) 0 B) 1 C) 2 D) 3 E) 4

8. $Z_{/5}$,

   $f(2x+1) = \dfrac{3x-3}{4} \Rightarrow \mathbf{f^{-1}(x) = ?}$

   A) 2x – 1 B) x + 2 C) x + 3 D) 3 – 2x E) x – 3

9. $5^{-1} + 7^{-1} - 2 \cdot 3 \equiv x \pmod{6}$

$\Rightarrow$ **x = ?**

A) 0 B) 1 C) 2 D) 3 E) 4

10. $x^2 + 10x + 24 \equiv 3 \pmod{8}$

$\Rightarrow$ **ÇK(SS) = ?**

A) {1, 5} B) {1, 3} C) {3, 5} D) {4, 5} E) {5, 6}

11. $A = \{x \mid 20 < x < 105,\ x \equiv 1 \pmod{5}\}$

$B = \{x \mid 15 < x < 120,\ x \equiv 1 \pmod{6}\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 2 B) 3 C) 4 D) 5 E) 6

12. $A = \{x \mid 10 < x < 150,\ x \equiv 4 \pmod{6}\}$

$B = \{x \mid 20 < x < 160,\ x \equiv 6 \pmod{8}\}$

$\Rightarrow$ **$n(A \cap B) = ?$**

A) 3 B) 4 C) 5 D) 6 E) 7

13. $f(x) = \begin{cases} x^2 - 1 & , \quad x \equiv 1 \pmod{5} \\ x - 3 & , \quad x \equiv 3 \pmod{5} \end{cases}$

$g(x) = \begin{cases} x - 5 & , \quad x \equiv 0 \pmod{7} \\ x - 3 & , \quad x \equiv 1 \pmod{7} \end{cases}$

$\Rightarrow$ **$(fog)(1) + (gof)(6) = ?$**

A) 1 B) 15 C) 20 D) 25 E) 30

14. $\left(\frac{7}{9}\right)^{-105} \equiv x \pmod{5} \Rightarrow$ **x = ?**

A) 0 B) 1 C) 2 D) 3 E) 4

15. $1^{41} + 2^{41} + 3^{41} + \ldots + 39^{41} \equiv x \pmod{40}$

$\Rightarrow$ **x = ?**

A) 0 B) 1 C) 2 D) 3 E) 4

16. $3^x \equiv 6 \pmod{7}$

$9 < x < 100 \Rightarrow$ **min(x) = ?**

A) 12 B) 15 C) 18 D) 21 E) 24

Yanıtlar / Answers

1. B	4. E	7. A	10. A	13. D	16. B
2. D	5. B	8. C	11. B	14. C	
3. A	6. E	9. A	12. D	15. A	

1. $1215 \equiv x \pmod 6 \Rightarrow \mathbf{x = ?}$

A) 1 B) 2 C) 3
D) 4 E) 5

2. $-1318 \equiv a \pmod 3 \Rightarrow \mathbf{a = ?}$

A) 1 B) 2 C) 3
D) 4 E) 0

3. $1316 \equiv x \pmod 2$,
$-1915 \equiv y \pmod 5$
$\Rightarrow \mathbf{x + y = ?}$

A) 0 B) 1 C) 2
D) 3 E) 4

4. $0 < x < 8$,
$x + y \equiv 5 \pmod 8$,
$x - y \equiv 3 \pmod 8$
$\Rightarrow \mathbf{x = ?}$

A) 1 B) 3 C) 4
D) 5 E) 6

5. $f : Z_{/5} \to Z_{/5}$,
$f(x) = \overline{2}x + \overline{4} \Rightarrow \mathbf{f(\overline{6}) = ?}$

A) $\overline{0}$ B) $\overline{1}$ C) $\overline{2}$
D) $\overline{3}$ E) $\overline{4}$

6. $f : Z_{/7} \to Z_{/7}$,
$f(\overline{3}x + \overline{1}) = \overline{3}x + \overline{4} \Rightarrow \mathbf{f(\overline{4}) = ?}$

A) $\overline{0}$ B) $\overline{1}$ C) $\overline{2}$
D) $\overline{3}$ E) $\overline{4}$

7. $f : Z_{/6} \to Z_{/6}$,
$f(x) = x + \overline{1} \Rightarrow \mathbf{f^{-1}(x) = ?}$

A) $x + \overline{5}$ B) $x + \overline{4}$ C) $x + \overline{3}$
D) $x + \overline{2}$ E) $x + \overline{1}$

8. $f : Z_{/4} \to Z_{/4}$,
$3 \cdot f(x) = \overline{3}x + \overline{2} \Rightarrow \mathbf{f^{-1}(x) = ?}$

A) x B) $x + \overline{1}$ C) $x + \overline{2}$
D) $x + \overline{3}$ E) $\overline{2}x + \overline{2}$

9. $1915^{193} \equiv x \pmod 5 \Rightarrow$ **$x = ?$**

A) 0 B) 1 C) 2
D) 3 E) 4

10. $319^5 \equiv x \pmod 6 \Rightarrow$ **$x = ?$**

A) 0 B) 1 C) 2
D) 3 E) 4

11. $129^{6x+1} \equiv a \pmod 5 \Rightarrow$ **$a = ?$**

A) 0 B) 1 C) 2
D) 3 E) 4

12. $174^{1391} \equiv \ldots\ldots A \Rightarrow$ **$A = ?$**

A) 0 B) 1 C) 2
D) 6 E) 4

13. $1293^{415} \equiv x \pmod 5 \Rightarrow$ **$x = ?$**

A) 4 B) 3 C) 2
D) 1 E) 0

14. $A = 0! + 1! + 2! + \ldots\ldots + 1987!$,

$A \equiv x \pmod 5 \Rightarrow$ **$x = ?$**

A) 4 B) 3 C) 2
D) 1 E) 0

15. $1213^{497} + 1517^{318} \equiv x \pmod 9 \Rightarrow$ **$x = ?$**

A) 1 B) 3 C) 5
D) 7 E) 8

16. $16^8 + 16^7$

sayısının 5 ile bölümünden kalan kaçtır?

What is the remainder when the number $16^8 + 16^7$ divided by 5?

A) 1 B) 2 C) 3 D) 4 E) 5

(KARADENİZ TEKNİK ÜNİVERSİTESİ- YÖS 2016)

Yanıtlar / Answers

1. C	**4. C**	**7. A**	**10. B**	**13. C**	**16. B**
2. B	**5. B**	**8. C**	**11. E**	**14. A**	
3. A	**6. A**	**9. A**	**12. E**	**15. C**	

1. $Z_{/7}$,

$x + 5 \equiv 3 \pmod{7} \Rightarrow$ **$x = ?$**

A) 2 B) 3 C) 4 D) 5 E) 6

2. $(2013)^{1923} \equiv x \pmod{9} \Rightarrow$ **$x = ?$**

A) 0 B) 1 C) 3 D) 6 E) 8

3. $f(x) = \begin{cases} 3x - 1 & x \equiv 0 \pmod{2} \\ x + 1 & x \equiv 1 \pmod{2} \end{cases}$

$g(x) = \begin{cases} 4x + 1 & x \equiv 0 \pmod{3} \\ x^2 - 1 & x \equiv 1 \pmod{3} \\ 3x + 1 & x \equiv 2 \pmod{3} \end{cases}$

$\Rightarrow$ **gof(5) + fog(5) = ?**

A) 68 B) 70 C) 72 D) 74 E) 78

4. $\left(-\frac{2}{3}\right)^{55} \equiv x \pmod{4} \Rightarrow$ **$x = ?$**

A) 0 B) 1 C) 2 D) 3 E) $\frac{2}{3}$

5. $(107)^{-84} \equiv x \pmod{7} \Rightarrow$ **$x = ?$**

A) 0 B) 1 C) 3 D) 4 E) 6

6. $Z_{/8}$,

$x + 7 \equiv 3 \pmod{8} \Rightarrow$ **$x = ?$**

A) 3 B) 4 C) 5 D) 6 E) 7

7. $3x + 4 \equiv 1 \pmod{5} \Rightarrow$ **$x = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

8. $f(x) = \begin{cases} x^2 - 2 & x \equiv 0 \pmod{3} \\ 2x + 3 & x \equiv 1 \pmod{3} \\ 3x - 1 & x \equiv 2 \pmod{3} \end{cases}$

$\Rightarrow$ **fofof(3) = ?**

A) 48 B) 49 C) 50 D) 51 E) 52

9. $Z_{/5} \to Z_{/5}$,

$f(x) = 2x + 1$, $f \circ g(x) = x + 4 \Rightarrow$ **$g(4) = ?$**

A) 0 B) 1 C) 2 D) 3 E) 4

10. $Z_{/7} \to Z_{/7}$,

$f(x) = 2x + 3 \Rightarrow$ **$f^{-1}(x) = ?$**

A) 4x + 2 B) 4x + 3 C) 4x + 4

D) 4x + 5 E) 4x + 6

11. $(3x + 4)\cdot(2x + 1) \equiv 4 \pmod 5 \Rightarrow$ **ÇK(SS) = ?**

A) {0, 2} B) {0, 3} C) {0, 4}

D) {1, 3} E) {1, 4}

12. $(2011)^{6n+5} \equiv x \pmod 7 \Rightarrow$ **$x = ?$**

A) 1 B) 2 C) 3 D) 4 E) 5

13. $5^{-1} + 3^{-1} + 2^5 + 5^2 \equiv x \pmod 8 \Rightarrow$ **$x = ?$**

A) 1 B) 3 C) 4 D) 6 E) 7

14. $\left(\frac{4}{3}\right)^{-75} \equiv x \pmod 7 \Rightarrow$ **$x = ?$**

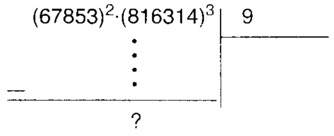
A) 2 B) 3 C) 4 D) 5 E) 6

15. $2x + 4 \equiv 0 \pmod 6 \Rightarrow$ **ÇK(SS) = ?**

A) {1} B) {2} C) {4}

D) {1, 4} E) {2, 4}

16.



A) 1 B) 3 C) 4 D) 5 E) 7

[EGE ÜNİVERSİTESİ – YÖS 201

Yanıtlar / Answers

1. D	**4. A**	**7. D**	**10. A**	**13. A**	**16. E**
2. A	**5. B**	**8. C**	**11. C**	**14. E**	
3. C	**6. B**	**9. B**	**12. D**	**15. D**	

Alıştırma / Exercise 1

1 - 3 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 1 – 3.

$n \in N$,

$$X(n)=\begin{cases}2n+20, & 0\le n<8\\ X(n-5), & 8\le n\end{cases}$$

1. **$X(21) + X(5) = ?$**

Yanıt / The Answer is **62**

2. **$n < 30$**
$X(54) = X(n) \Rightarrow \Sigma n = ?$

Yanıt / The Answer is **99**

3. **$AB \in N$**
$X(AB) = AB \Rightarrow \min(AB) = ?$

Yanıt / The Answer is **10**

4 - 6 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 4 – 6.

Taylan, Yücel, Bülent, Sevda ve Dilek aralarında bir atış yarışması yapacaklardır. Yarışmada her birine 10 atış hakkı verilmiştir. Yapılan her isabetli atışa 8 puan verilirken isabetsiz atışlarda 3 puan siliniyor. Aşağıdaki tablo yarışma sonrasında alınan puanları göstermektedir.

Taylan, Yücel, Bülent, Sevda and Dilek will play shot-game together. In this game each one of them has only 10 shot right. If they shoot straightly, they get 8 points; if they don't, they lose 3 points. In the table below the points are shown after the game.

isim name	Taylan	Yücel	Bülent	Sevda	Dilek
puan point	36	25	58	3	47

4. **Buna göre Dilek kaç isabetli atış yapmıştır?**
Accordingly, how many shots did Dilek make straightly?

Yanıt / The Answer is **7**

5. **Buna göre Taylan'ın isabetli atış sayısı Sevda'nın isabetli atış sayısından kaç fazladır?**
Accordingly, what is more of targeted shot of Taylan than Sevda's one?

Yanıt / The Answer is **3**

6. **Buna göre isabetli atış sayısı ile isabetsiz atış sayısı eşit olan yarışmacı kimdir?**
Accordingly, who is the gamer whose targeted shot and missed shot are equal?

Yanıt / The Answer is **Yücel**

7 - 9 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 7 – 9.

Herhangi bir sayının soldan ve sağdan okunuşu aynı ise bu sayılara polindrom sayı denir.

Örneğin: 1881, 121, 66, ...

Polindrome number is any number having the some reading from left and right. For example; 1881, 121, 66 ...

7. **Buna göre dört basamaklı 2 farklı polindrom sayının toplamı en az kaçtır?**
Accordingly, what is the sum of 2 different polindrome numbers with four places at least?

Yanıt / The Answer is **2112**

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8. **Rakamları toplamı 26 olan 5 basamaklı en büyük polindrom sayı kaçtır?**
What is the greatest polindrome number with 5 places if the sum of its places are 26?

Yanıt / The Answer is **94049**

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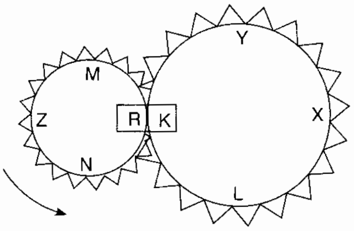
9. **Dört basamaklı en küçük polindrom sayı ile üç basamaklı en büyük polindrom sayının farkı kaçtır?**
What is the difference between the smallest polindrome number with four places and the greatest polindrome number with three places?

Yanıt / The Answer is **2**

10 - 11 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 10 – 11.

Aşağıda üzerlerine eşit aralıklarla harfler yerleştirilmiş iki adet dişli çark verilmiştir. Dişli çarkların üzerine ise sabitlenmiş bir gösterge yerleştirilmiştir.



Küçük çark saat yönünün tersinde hareket ettiğinde büyük çark saat yönünde hareket etmektedir. Küçük çark 2 saniyede 90° dönmektedir. Küçük çark 1 tam tur attığında büyük çark da 90° dönmektedir.

When the little gear moves anticlockwise, the big one moves clockwise. The little gear turns by 90° in 2 seconds. When the little gear takes a complete stroll, the big one turns by 90°.

10. **Buna göre küçük çark ok yönünde dönmeye başladıktan 80 saniye sonra gösterge hangi iki harfi gösterir?**
Accordingly, after 80 seconds the little gear moves in the direction of arrow, which two letters does the indicator show?

Yanıt / The Answer is $\boxed{R}\boxed{X}$

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11. **Eğer küçük çark ok yönünde dönmeye başlıyorsa, göstergenin $\boxed{R}\boxed{K}$ şeklinde olabilmesi için en az kaç saniye geçmesi gerekmektedir?**
If the little gear starts to turn by the direction of arrow, how many seconds should pass at least to be $\boxed{R}\boxed{K}$ of indicator?

Yanıt / The Answer is **32**

KONU TESTLERİ
SUBJECT TESTS

Test 1

1 - 3. soruları aşağıdaki bilgilere göre cevaplayınız.

According to information below, answer the questions 1 – 3.

Soldan sağa doğru artan ardışık rakamlarla yazılan sayılara MONOTONİK sayı denir.

Örneğin: 12, 123, 456, 789

MONOTONIC number is written from left to right increasing by consecutive number. For example: 12, 123, 456, 789

1. **Buna göre üç basamaklı en büyük MONOTONİK çift sayı ile dört basamaklı en küçük MONOTONİK çift sayının toplamı kaçtır?**

   Accordingly, what is the sum of the greatest MONOTONIC even number with three places and the smallest MONOTONIC odd number with four places?

   A) 1357 B) 1912 C) 2023 D) 2212 E) 2345

2. **Üç basamaklı MONOTONİK tek sayıların toplamı kaçtır?**

   What is the sum of MONOTONIC odd numbers with three places?

   A) 1821 B) 1822 C) 1823 D) 1824 E) 1825

3. **Rakamları toplamı 22 olan dört basamaklı MONOTONİK sayı kaçtır?**

   The sum of the numbers with four places is 24. What is that MONOTONIC number?

   A) 2345 B) 3456 C) 4567 D) 5678 E) 6789

4 - 6. soruları aşağıdaki bilgilere göre cevaplayınız.

According to information below, answer the questions 4 – 6.

Rakamları toplamına tam bölünen sayılara kusursuz sayı denir.

Örneğin: 48 = 4 + 8 = 12

$\frac{48}{12} = 4$ O halde 48 kusursuz sayıdır.

Perfect number is divided into sum of its number completely.

For example; 48 = 4 + 8 = 12

$\frac{48}{12} = 4$ Thus, 48 is perfect number.

4. **Aşağıdaki sayılardan hangisi kusursuz sayı değildir?**

   Which of the following numbers isn't perfect number?

   A) 432 B) 603 C) 512 D) 265 E) 444

5. **Aşağıdakilerden hangisi dört basamaklı en küçük kusursuz sayıdır?**

   Which of the followings is the smallest perfect number with four places?

   A) 1000 B) 1002 C) 1008 D) 1010 E) 1011

6. **Üç basamaklı en küçük tek kusursuz sayı ile iki basamaklı en büyük çift kusursuz sayının toplamı kaçtır?**

   What is the sum of the smallest odd perfect number with three places and the greatest even perfect number with two places?

   A) 200 B) 201 C) 202 D) 203 E) 204

7 - 9. soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 7 – 9.

Öğrencilerine oyun oynatmak isteyen bir öğretmen öğrencilerin oturacağı sıraları 1'den 50'ye kadar numaralandırıyor. Oyunun kuralı ise şudur: Öğretmen 1'den 25'e kadar sayacak ve 1 dediğinde, sadece 1 numaralı sıradaki öğrenci ayağa kalkıp oturacak, 2 dediğinde 2'nin tam katı olan sıralardaki öğrenciler ayağa kalkıp oturacak, 3 dediğinde ise 3'ün tam katı olan sıralardaki öğrenciler ayağa kalkıp oturacaktır. Öğretmen bu şekilde devam ederek 1'den 25'e kadar sayacaktır.

A teacher wants to play a game with her students. So, she gives the numbers to student's desks from 1 to 50. This is the rule: Teacher counts from 1 to 25 and when she says 1, the student sitting on the desk with number 1 will stand and sit. When she says 2, the students sitting on the desk with multiple of 2 will stand and sit. When she says 3, the students on the desk with multiple of 3 will stand and sit. The teacher will count from 1 to 25 in this way.

7. **Buna göre kaç öğrenci 1 defa ayağa kalkıp oturmuştur?**
Accordingly, how many students stand and sit for one time?
A) 7 B) 8 C) 9 D) 10 E) 11

8. **Hiç ayağa kalkıp oturmayan kaç öğrenci vardır?**
How many students are there who don't stand and sit ever?
A) 6 B) 7 C) 8 D) 9 E) 10

9. **Aşağıda numarası verilmiş sıralarda oturan öğrencilerden hangisi oyun bittiğinde daha fazla ayağa kalkıp oturmuştur?**
Which of the following of the students sitting on numbered desks stands and sits more when the game is over?
A) 45 B) 42 C) 40 D) 36 E) 30

10 - 12. soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 10 – 12.

Bir üniversiteye ait olan A, B, C, D, E girişlerinin kapıları 1, 2, 3, 4 ve 5 numaralı anahtarlar ile açılmaktadır. Anahtarlar ile ilgili aşağıdakiler bilinmektedir.

I. **Her anahtarın numarası ait olduğu kapının alfabetik sırasından farklıdır.**

II. **3 ve 4 numaralı anahtarlar ile D ve E kapıları açılmaktadır.**

III. **B kapısına ait anahtarın numarası A kapısına ait olan anahtarın numarasından büyüktür.**

The doors of entrances A, B, C, D, E of a university are opened by keys 1, 2, 3, 4 and 5. Here is information about keys below:

I. Number of every key is different from alphabetical order of the doors.

II. Doors D and E are opened by keys 3 and 4.

III. Number of key of door B is bigger than number of key of door A.

10. **B kapısını hangi anahtar açar?**
Which key opens door B?
A) 1 B) 2 C) 3 D) 4 E) 5

11. **A kapısını hangi anahtar açar?**
Which key opens door A?
A) 5 B) 4 C) 3 D) 2 E) 1

12. **Anahtar numarası en büyük olandan en küçük olana doğru kapıların sıralaması aşağıdakilerden hangisidir?**
Which one of followings is the correct ordering of doors from the biggest key number to the smallest one?
A) B – E – D – C – A
B) B – E – D – A – C
C) B – D – E – A – C
D) A – D – E – B – C
E) C – E – D – B – A

Yanıtlar / Answers

1. B	3. C	5. A	7. D	9. D	11. D
2. D	4. D	6. B	8. A	10. E	12. B

1 - 3. soruları aşağıdaki bilgilere göre cevaplayınız.

According to information below, answer the questions 1 – 3.

Rakamlarının kareleri toplamı asal sayı olan doğal sayılara asal karesel sayı denir.

Natural numbers are prime numbers of sum of squares of numbers. This is called prime quadratic number.

Örneğin: $2^2 + 5^2 = 29$ olduğundan 25 bir asal karesel sayıdır.

For example $2^2+5^2 = 29$, 25 is a prime quadratic number.

1. **Aşağıdakilerden hangisi asal karesel değildir?**

Which of followings is not prime quadratic?

A) 16 B) 45 C) 56 D) 12 E) 62

2. **İki basamaklı en büyük asal karesel sayı kaçtır?**

What is the greatest prime quadratic number with two places?

A) 93 B) 94 C) 95 D) 96 E) 97

3. **İki basamaklı en büyük asal karesel sayı ile iki basamaklı en küçük asal karesel sayının toplamı kaçtır?**

What is the sum of the greatest prime quadratic number with two places and the smallest prime quadratic one with two places?

A) 104 B) 105 C) 106 D) 107 E) 108

4 - 6. soruları aşağıdaki bilgilere göre cevaplayınız.

According to information below, answer the questions 4 – 6.

Çift sayılar 2'den başlayıp yan yana yazılarak her grup. grup sayısı kadar sayı içerecek şekilde aşağıdaki sayı dizisi oluşturuluyor.

Even numbers are written side to side beginning from 2. Every group makes number sequence below which includes numbers as many as group numbers.

2 ⇒ **I. grup / group I**
4 6 ⇒ **II. grup / group II**
8 10 12 ⇒ **III. grup / group III**
14 16 18 20 ⇒ **IV. grup / group IV**

Örneğin III. grupta 8, 10, 12 sayıları yer almaktadır.

For example; there are 8, 10, 12 in group III.

4. **Buna göre 8. grupta yer alan sayıların en büyüğü ve en küçüğünün toplamı kaçtır?**

Accordingly, what is the sum of the biggest and smallest number in group VIII?

A) 128 B) 130 C) 132 D) 134 E) 136

5. **Buna göre 10. grupta yer alan en küçük sayı kaçtır?**

Accordingly, what is the smallest number in group X?

A) 88 B) 90 C) 92 D) 94 E) 96

6. **Buna göre 17. grupta yer alan ilk sayı, 16. grupta yer alan ilk sayıdan kaç fazladır?**

Accordingly, how many bigger is the first number in group XV than the first one in group XVI?

A) 28 B) 30 C) 32 D) 34 E) 36

7 - 9. soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 7 – 9.

Mayın tarlası oyununda üzerinde sayı yazan kutuların etrafında kutunun üzerinde yazan sayı kadar bomba vardır.

In minefield game, there are bombs around the boxes having number on then as much as number on box.

1	●	2	●
2		2	
●	1	▨	▨

● : Bomba Bomb
▨ : Temiz Clean

7. **Buna göre aşağıdaki mayın tarlasında kaç tane bomba vardır?**
Accordingly, how many bombs are there in minefield below?

	3	2	
		2	
		2	1
1	1	1	

A) 6 B) 5 C) 4 D) 3 E) 2

8. **Buna göre yandaki mayın tarlasında kaç tane mayınsız kare vardır?**
Accordingly, how many clean square are there in minefield beside?

1		1	
	2	2	
1		1	
		1	

A) 8 B) 7 C) 6 D) 5 E) 4

9. **Buna göre yandaki mayınlı tarlada kaç tane mayın vardır?**
Accordingly, how many mine are there in minefield beside?

1	2	1	1
			1
	2		1

A) 5 B) 4 C) 3 D) 2 E) 1

10 - 12. soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 10 – 12.

I. Öğretmen **Teacher I**	II. Öğretmen **Teacher II**	III. Öğretmen **Teacher III**	IV. Öğretmen **Teacher IV**	V. Öğretmen **Teacher V**
B	D	D	D	B
E	E	C	E	E
C	A	A	A	D
D	C	E	C	C
A	B	B	A	A

Yukarıdaki tablo 5 sorudan oluşan bir teste 5 öğretmenin oluşturdukları cevap anahtarıdır.
Her öğretmen en az bir soruyu doğru cevaplamıştır. Her öğretmenin doğru cevap sayısı birbirinden farklıdır. Bu testteki her sorunun cevabı birbirinden farklı olduğuna göre;

The table above is an answer that 5 teachers made for a 5 questioned test. Every teacher gives the correct answer for the least one question. The correct answer number of every teacher is different from each other. If the answer of every question in this test is different from each other,

10. **I. Öğretmenin yanlış cevap sayısı kaçtır?**
How many answers of teacher I is false?
A) 5 B) 4 C) 3 D) 2 E) 1

11. **Hangi öğretmen bütün soruları doğru cevaplamıştır?**
Which teacher gives the corret answers for all questions?
A) I B) II C) III D) IV E) V

12. **I. ve II. öğretmenlerin doğru sayılarının toplamı kaçtır?**
What is sum of the correct answers of teacher I and II?
A) 9 B) 8 C) 7 D) 6 E) 5

Yanıtlar / Answers

1. E	**3. B**	**5. C**	**7. A**	**9. D**	**11. B**
2. B	**4. B**	**6. C**	**8. B**	**10. B**	**12. D**

1 – 3 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 1 – 3.

Bir pozitif tam sayının öz sayısı aşağıda belirtilen yöntemle bulunur:

Core number of a positive integer is found method below:

- **Sayı 9 ile çarpılır.**
  Number is multiplicated by 9 .
- **Elde edilen sayının rakamları toplanır.**
  The digits of number obtained are added.
- **Bu toplam, sayının öz sayısıdır.**
  The sum is core number of the number.
- **Örneğin: 14'ün öz sayısı;**
  14 x 9 = 126 ⇒ 1 + 2 + 6 = 9 işlemleriyle 9 olarak bulunur.
  For example: Core number of 14 is 9 with the operation 14 x 9 = 126 ⇒ 1 + 2 + 6 = 9

1. **Aşağıdaki sayılardan hangisinin öz sayısı 18 değildir?**
Which core number of followings is not 18?
A) 52 B) 63 C) 67 D) 75 E) 86

2. **Aşağıdaki sayılardan hangisinin öz sayısı en küçüktür?**
Which core number of followings numbers is the smallest)
A) 91 B) 125 C) 132 D) 141 E) 152

3. **Aşağıdakilerden hangisi 5 basamaklı bir sayının öz sayısı olamaz?**
Which one of the followings is not core number of a number with 5 places?
A) 18 B) 27 C) 36 D) 45 E) 54

4 – 6 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 4 – 6.

Arda (A), Belis (B), Cem (C), Deren (D) ve Esra (E) adındaki beş kişinin yaşlarıyla ilgili olarak aşağıdaki bilgiler veriliyor.

Information is below about the ages of Arda(A). Belis(B Cem(C), Deren(D) and Esra (E).

B – C = 9
D – B = 13
E – D = 4
C – A = 6

4. **Belis Arda'dan kaç yaş büyüktür?**
How many older is Belis than Arda?
A) 11 B) 12 C) 13 D) 14 E) 15

5. **Esra Arda'dan kaç yaş büyüktür?**
How many older is Esra than Arda?
A) 28 B) 30 C) 32 D) 34 E) 36

6. **Bu beş kişinin yaşlarının büyükten küçüğe sıralaması aşağıdakilerden hangisidir?**
Which one of following is the age ordering of these people from older to younger?
A) E-D-A-B-C
B) E-B-D-C-A
C) E-D-B-A-C
D) E-D-B-C-A
E) A-C-B-D-E

7 – 9 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 7 – 9.

Kendisi hariç bütün pozitif bölenlerinin toplamı kendisine eşit olan sayılara mükemmel sayı denir.
Perfect number is divided into sum of its number completely except for itself.

Mükemmel sayı bulma formülü $2^{P-1}(2^P - 1)$'dir.
It's the formula $2^{P-1}(2^P - 1)$.

Formüldeki p ve $2^p - 1$ sayıları asal sayı olmalıdır..
Number p and $2^p - 1$ *must be prime number in formula.*

Örneğin; p = 2 için $2^1(2^2 - 1) = 6 \Rightarrow 6$ sayısı mükemmel sayıdır.
For example, for p = 2 $2^1(2^2 - 1) = 6$ *is the perfect number.*

7. Aşağıdakilerden hangisi mükemmel sayıdır?
Which one of followings is perfect number?
A) 27 B) 28 C) 30 D) 32 E) 35

8. Aşağıdakilerden hangisi mükemmel sayıdır?
Which one of followings is perfect number?
A) 476 B) 486 C) 496 D) 506 E) 516

9. Aşağıdakilerden hangisi mükemmel sayıdır?
Which one of followings is perfect number?
A) 7988 B) 7998 C) 8108 D) 8118 E) 8128

10 – 12 soruları aşağıdaki bilgilere göre cevaplayınız.
According to information below, answer the questions 10 – 12.

4 basamaklı doğal sayılar kümesinden tam sayılar kümesine bir g fonksiyonu g(ABCD) = AB – CD (AB ve CD iki basamaklı sayılar) biçiminde tanımlanıyor.

A g function defined from set of natural numbers with 4 places to sef of integers in the way of g(ABCD) = AB – CD (AB and CD are numbers with two places.)

Örneğin; g(2465) = 24 – 65 = –41
For example; g(2465) = 24 – 65 = –41

10. g(8298) + g(9769) ifadesinin değeri kaçtır?
What is the value of g(8298) + g(9769)?
A) –16 B) –12 C) 8 D) 12 E) 16

11. g(AB93) = –41 ise **AB sayısı kaçtır?**
What is AB if g(AB93) = –41 =?
A) 32 B) 42 C) 52 D) 62 E) 72

12. g(64A7) ifadesinin **en küçük değeri kaçtır?**
What is the smallest value of g(64A7) = ?
A) 47 B) 37 C) 27 D) –23 E) –33

Yanıtlar / Answers

1. C	3. E	5. C	7. B	9. E	11. C
2. B	4. E	6. D	8. C	10. D	12. E